Refit and Remove Manual

MG ZS EV

The Refit and Remove Manual provides the specification, system introduction, service procedure and adjustment information of the new MG ZS EV vehicle.

After mastering the content of this manual and materials in the service bulletins of the SAIC Motor Passenger Vehicle Co., the technicians of Authorised Repairers of SAIC Motor Passenger Vehicle Co. can provide better service for MG ZS EV vehicle owners.

For relevant information about product brands, part numbers or special tools mentioned in this manual, we recommend contacting SAIC Motor Passenger Vehicle Co.

SAIC Motor Passenger Vehicle Co.

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How to Use this Manual

Overview

To help you with the use of this Manual, we divided the Manual into several chapters and sections. The title of each chapter is outside each page header, and the title of the corresponding section is inside the page header.

The contents of the chapter and section are at the beginning of the Manual, which are divided by chapters and sections. Page numbers start with the first page of the text, which are outside the footer of the page.

All the repair operation steps must be arranged in the order they normally appear in. The serial number in the illustration refers to the corresponding text.

The instructions for adjustment and repair operations include the service tool number to be applied, and the corresponding illustration also reflects the use status of the tool. The instructions for adjustment and repair operations also involve wear limits, torque values, guide information and useful assembly details. Each adjustment or repair operation has an unique repair operation number.

The meanings of "Warning", "Note" and "Prompt" are as follows:

"Warning" requires you to take necessary measures or not to take prohibited measures. If a "Warning" is neglected, the following consequences may occur:

- Serious injury to a technician
- Serious injury to other technical staff in the work area
- In case of improper vehicle repair, serious injury to the driver and/or passengers in the vehicle will be caused.

"Note" requires to pay special attention to necessary measures or prohibited measures. If a "Note" is neglected, the following consequences may occur:

- Damage to the vehicle
- Unnecessary vehicle repairs
- Unnecessary parts replacement
- Improper operation or performance of the system or component under repair
- Damage to any system or component which is dependent upon the proper operation or performance of the system or component under repair
- Improper operation or performance of any system or component which is dependent upon the proper operation or performance of the system or component under repair
- Damage to fasteners, basic tools, or special tools
- Leakage of coolant, lubricating oil or other main fluid

"Description" emphasizes the necessary features of certain diagnostic or service procedure. It is for the following purposes:

- Clarify a procedure
- Provide additional information for the execution of procedure
- Provide internal reasons why to operate according to recommended procedures
- Provide information which can help to execute the procedures more effectively
- Present information that gives the technician the benefit of past experience in accomplishing a procedure with greater ease

"Prompt" provides some help information.

Reference

LH or RH in this manual is viewed from the rear of vehicle.

Operations involved in this manual do not include tests after service. This is especially important after the component related to safety is serviced or replaced.

Dimensions

Dimensions referenced here are based on design engineering specifications. This manual includes all the available service limits.

The company will continuously improve the vehicle specification, design and manufacturing. So there will be some changes in vehicle frequently. Although we try our best to make the manual be correctly written, we cannot guarantee there is no little error between the specification and description in this manual as for the vehicle in any particular situation.

Notices of Service and Replacement

Components

In case of component replacement, use the recommended by us only.

Special attention should be taken to the followings which are all related with the service or replacement of components and accessories:

- Use of other components rather than those recommended by the SMC may weaken vehicle safety factors and anti-corrosion measures.
- The torque value given in the manual must be used.
- The fasteners must be fitted at specified position. If the performance of fasteners is reduced after removal, then they must be replaced.
- If the components rather than those recommended by SMC used, the guarantee clause of the vehicle will be invalid.

All components recommended by SMC shall share the rights given in the guarantee.

SMC dealers should only provide SMC recommended components.

Special Tools

The use of special tool helps to prevent the possible component damage.

Some operations herein cannot be performed without relevant special tools.

The special tools herein can be available from the supplier below:

Shanghai Runyue Industrial Development Co., Ltd

Address: Skirt Building, Lianhua Building, 159 Tianzhou Road, Shanghai

Zip Code: 200233

Tel: 021-64853663

Fax: 021-64853639

Contents

General Information 1

General Information 1
- General Precautions 1
- Safety Precautions 2
- Precautions for High Voltage............................... 3
- Environmental Precautions 4
- General Instructions for Assembly 6
- Ball and Roller Bearings 7
- Oil Seals 8
- Junction and Mating Face 9
- Locking Device.. 9
- Screw Threads 10
- Fastener Identification 10
- Flexible Pipe and Hose 12
- Electrical Precautions 13
- Supplementary Restraint System Precautions.. 14
- SRS Component Replacement Strategy 20
- Air Conditioning System Precautions 21
- Air Conditioning Compressor Replacement.. 23

Lifting & Towing 24
- Lifting Vehicle... 24
- Roadside Assistance 25

Vehicle Identification Number..........................26
- Vehicle Identification Number........................... 26
- Position of Other Signs 27

Lubrication & Maintenance 28
- Capacity 28
- Fluid 28
- Lubricating Fluids 29

Cooling System 31

Cooling System...31
- Specifications 31
  - Torque 31
- Service Procedures-EDS 32
  - Coolant - Drain and Refill 32
  - Expansion Tank Cap - Pressure Test............... 33
  - System Pressure Test 34
  - Coolant Expansion Tank - PEB....................... 34
  - Hose Assembly - Electric Water Pump to Charger 35
  - Hose Assembly - Charger to PEB 36
  - Hose Assembly - Drive Motor to Radiator... 37
  - Hose Assembly - Radiator to Electric Water Pump... 38
  - Overflow Pipe Assembly 39
  - PEB Coolant Sensor 39
  - PEB Water Pump.. 40
- Service Procedures-Battery 41
  - Coolant - Drain and Refill 41
  - Expansion Tank Cap - Pressure Test............... 42
  - System Pressure Test 43
  - Coolant Expansion Tank - Battery 43
  - Hose Assembly - Electric Water Pump to Traction Battery Heater................................ 44
  - Hose Assembly - Traction Battery Heater to Battery Chiller 45
  - Hose Assembly - Battery Chiller to Battery... 45
  - Traction Battery-side Hose Assembly 46
  - Hose Assembly - Traction Battery to Battery Expansion Tank................................. 47
  - Hose Assembly - Battery Expansion Tank to Water Pump 48
  - Battery Chiller 49
  - Battery Chiller Expansion Valve..................... 50
  - Electric Water Pump 51
- Service Procedures-Cooling Module.................. 52
  - Cooling Fan Assembly................................... 52
  - Cooling Fan Low-speed Resistor 52
  - Radiator Assembly 53
  - Radiator Drain Valve..................................... 55
  - Radiator Airflow Deflector - Upper 55
  - Radiator Airflow Deflector - Lower 56
  - Radiator Airflow Deflector - Left 56
  - Radiator Airflow Deflector - Right 57

Power and Control System 59

Power Drive System...59
- Specifications 59
  - Torque 59
- Service Procedures... 60
  - Power Electronic Box 60
  - Drive motor.. 62
  - High Voltage Interlock Cover Plate................ 63
  - Motor Rear End Cover Plate......................... 64
  - Axle Shaft Connecting Shaft 65
  - Axle Shaft Oil Seal 66
  - Hose Fitting 67
  - Axle Shaft Sealing Test 68

Contents

Special Tools 70
HV Battery Pack and Charging System 71
Specifications 71
Torque 71
Service Procedures.. 72
Manual Service Disconnect 72
High-voltage Battery Pack 73
Combined Charging Unit (CCU) 74
Battery Heater 75
Charging Port.. 76
Electric Vehicle Communication Controller (EVCC).. 77
Special Tools 78
HV Battery Pack Subsystem 79
Specifications 79
Torque 79
Service Procedures.. 80
Precautions for High Voltage System Disassembly 80
General Description 81
High Voltage Insulation Test 82
Battery Pack Integrity Tests.......................... 82
Upper Cover.. 83
Insulation Cotton - 50.3kWh 84
Flame Trap - 69.9kWh 85
BMS Module.. 85
BMS Module Bracket 86
Wire Harness.. 86
Bus-bar 88
CMU Module 89
Battery Module 90
EDM Module... 91
Vent Value.. 92
Cooling Water Pipe..................................... 92
Temperature Sensor 93
Tray 94
GND Harness 94
Deflector 95
Explosion Proof Value - 69.9kWh................. 95
Pressure Switch - 69.9kWh.......................... 96
Baffle - 69.9kWh 96
Special Tools 97
Vehicle Control Unit 98
Specifications 98
Torque 98
Service Procedures.. 99
Vehicle Control Unit.................................... 99
Transmission 101
Shift Lock Control 101
Specifications 101
Torque 101
Service Procedures.. 102
Electronic Shifter 102
Electrical Drive System 104
Specifications 104
Torque 104
Service Procedures.. 105
Oil - Drain and Refill.................................. 105
Electric Drive Transmission and Suspension 105
Differential Oil Seal - Left........................... 107
Electric Drive Transmission Disassembling.. 108
Intermediate Shaft Assembly 112
Differential Assembly................................. 113
Electrical Park Module 114
P Gear Unlocking 115
Electrical Park Motor Control Unit 115
Special Tools 116
HVAC System................................ 117
HVAC System 117
Specifications 117
Torque 117
Service Procedures-General 118
Odour Removal.. 118
Refrigerant Recovery and Recharging.......... 118
A/C Compressor Oil Balance...................... 120
Air Conditioning System Seals.................... 120
Replacement of A/C System O-ring 121
Service Procedures-Compressor and Condenser.. 122
Compressor... 122
Compressor Bracket 123
Condenser 123
Service Procedures-Pipe 124
A/C Pipeline A - Compressor to Condenser 124
A/C Pipeline B - Compressor to Condenser 125
A/C Pipeline - Condenser to Evaporator 126

Contents

A/C Pipeline - Evaporator to Compressor 127
A/C Pressure Sensor 128
Service Procedures-Conditioner 129
A/C Box Assembly 129
A/C Filter Element 130
Evaporator Core Assembly 131
Expansion Valve 132
Blower 133
Blower Speed Regulation Resistor 133
A/C Drain Pipe 134
Evaporator Core Temperature Sensor 134
Temperature Damper Actuator 135
Circulation Damper Actuator 135
Mode Damper Actuator 136
Electric Heater 136
Electric Heater Temperature Sensor 137
Service Procedures-Decompression Valve 138
Instrument Panel Air Duct 138
Air Outlet Temperature Sensor 138
Rear Face Air Duct 139
Body Relief Valve - Left 140
Body Relief Valve - Right 140
Service Procedures-Control 141
A/C Controller Assembly 141
Interior Temperature Sensor 141
Exterior Temperature Sensor 142
Solar Sensor 142

Steering System 143

Steering System 143
Specifications 143
Torque 143
Service Procedures 144
Steering Rack Subassembly 144
Steering Rack Outer Tie Rod 145
Steering Rack Inner Tie Rod 146
Steering Rack Gaiter 146
Upper Steering Column Assembly 147
Intermediate Shaft 148
Steering Column Trim Cover 148
Steering Wheel Positioning Adjustment 149
Steering Wheel Assembly 150
Steering Wheel Molding 151
Electric Steering Column Lock 151
Steering Wheel Multifunction Switch 152
Steering Wheel Combination Switch 153

Suspension System 155

Wheel Alignment 155
Specifications 155
Torque 155
Service Procedures 156
Wheel Alignment Check 156
Wheel Alignment Adjustment 156
Front Suspension 157
Specifications 157
Torque 157
Service Procedures 158
Front Low Control Arm Assembly 158
Front Lower Control Arm Outer Ball Joint 159
Front Lower Control Arm Rear Bush 159
Front Shock Absorber Assembly 160
Full Frame Front Subframe 162
Front Anti-roll Bar 166
Front Anti-roll Bar Links 166
Front Wheel Hub Bearing Assembly 167
Front Steering Knuckle 167
Special Tools 169
Rear Suspension 170
Specifications 170
Torque 170
Service Procedures 171
Rear Shock Absorber Assembly 171
Rear Suspension Spring Assembly 171
Rear Wheel Hub 172
Wheel Bracket 172
Rear Torsion Beam Assembly 173
Tyres and Wheels 174
Specifications 174
Torque 174
Service Procedures 175
Tires and Wheels 175
Tyre Pressure Monitoring System 176
Specifications 176
Torque 176
Service Procedures 177
Tyre Pressure Sensor 177
TPMS Control 177

Contents

Brake System.................................. 179

Brake 179

Specifications 179

Torque 179

Service Procedures.. 180

Front Brake Pad 180

Front Brake Disc 181

Front Brake Disc Guard Plate 182

Front Brake Caliper Housing Assembly 182

Front Brake Caliper Bracket 183

Rear Brake Pad 184

Rear Brake Disc 185

Rear Brake Disc Guard Plate 186

Rear Brake Caliper Housing Assembly 187

Rear Brake Caliper Bracket 188

Thickness and Circular Runout Check - Front Brake Disc 189

Thickness and Circular Runout Check - Rear Brake Disc 190

Reservoir Assembly 191

Brake Master Cylinder 192

Vacuum Booster Assembly 193

Vacuum Brake Hose Assembly 194

Brake Lamp Signal Sensor 195

Brake Pedal 195

Brake Pedal Position Sensor........................ 196

Accelerator Pedal 197

Master Cylinder Brake Hard Pipe 197

Front Left Brake Hard Pipe 198

Front Right Brake Hard Pipe 199

Connecting Pipe - ABS to Rear Brake Pipe 200

Rear Left Brake Pipe.................................. 202

Rear Right Brake Pipe................................ 203

Front Brake Hose 204

Rear Brake Hose 204

Brake System Bleed 205

Electric Vacuum Pump 206

Special Tools 207

Park Brake 208

Specifications 208

Torque 208

Service Procedures.. 209

Electronic Parking Brake Motor................... 209

Brake Module.. 210

Specifications 210

Torque 210

Service Procedures.. 211

Brake Modulator 211

Front Wheel Speed Sensor 212

Rear Wheel Speed Sensor 213

Driveline/Axle................................. 215

Drive Axle 215

Specifications 215

Torque 215

Service Procedures.. 216

Right Front Drive Shaft Assembly................ 216

Left Front Drive Shaft Assembly.................. 217

Constant-velocity Joint Assembly 219

Constant-velocity Joint Assembly Gaiter 220

Tripode Shaft Assembly.............................. 220

Tripode Joint Assembly Sleeve..................... 221

Special Tools 222

Interior Fitting................................ 223

Instrument Panel and Console........................ 223

Specifications 223

Torque 223

Service Procedures.. 224

Instrument Panel End Cover Plate 224

Instrument Panel Body................................ 224

Driver Side Lower Trim Panel Assembly 226

Glove Box Assembly.................................. 227

Instrument Panel Lower Closure Panel Assembly 228

Instrument Panel Side Air Outlet Assembly 228

Central Instrument Panel Air Outlet Assembly 229

Central Control Panel and Switch of Instrument Panel 230

Instrument Panel IPK Frame........................ 230

Instrument Panel Beam Assembly................ 231

Centre Console Heater Closing Plate Assembly 233

Centre Console Assembly 233

Centre Console Cup Holder 234

Centre Console Armrest Assembly............. 235

Contents

Centre Console Upper Trim Panel Assembly 235

Centre Console Rear Panel Assembly........... 236

Entertainment Panel Switch......................... 237

Interior Trim and Paneling 238

Specifications 238

Torque 238

Service Procedures.. 239

A Pillar Upper Trim Panel........................... 239

A Pillar Lower Trim Panel 239

B/C Pillar Upper Trim Panel 240

B/C Pillar Lower Trim Panel 241

D Pillar Upper Trim Panel 241

D Pillar Lower Trim Panel 242

Roof Trim Panel Assembly - without Sunroof... 243

Roof Trim Panel Assembly - with Sunroof... 244

Carpet 245

Sun Visor Assembly 245

Interior Roof Handle 246

Rear Parcel Shelf Assembly 246

Truck Side Trim Panel Assembly 247

Trunk Sill Trim Panel.................................. 247

Tail Gate Interior Trim Panel 248

Door Sill Trim Panel Assembly 248

Seat...249

Specifications 249

Torque 249

Service Procedures.. 250

Front Seat Assembly 250

Front Seat Interior Trim Panel..................... 250

Front Seat Exterior Trim Panel.................... 251

Front Seat Back Cover................................ 252

Front Seat Cushion Cover 252

Front Seat Back Adjusting Handle................ 253

Front Seat Back Assembly 253

Front Seat Cushion Assembly...................... 254

Seat Headrest Guide Sleeve 254

Rear Seat Cushion Assembly....................... 255

Rear Seat Cushion Cover and Foam 255

Rear Seat Back Latch 256

Rear Seat Back Assembly 256

Rear Seat Back Cover and Foam.................. 257

Rear Seat Back Hinge Bracket 257

Exterior Fitting................................ 259

Fixed Windows 259

Service Procedures.. 259

Windscreen 259

Rear Window.. 260

Rear Quarter Window 261

Bumpers, Fascias and Grille 262

Specifications 262

Torque 262

Service Procedures.. 263

Front Bumper Beam Assembly 263

Rear Bumper Beam Assembly 264

Front Bumper.. 264

Rear Bumper... 266

Exterior Trim and Paneling 268

Specifications 268

Torque 268

Service Procedures.. 269

Roof Rack Assembly 269

Roof Molding Assembly 269

A/C Air Intake Grille Assembly 270

Front Wheelhouse Liner Assembly.............. 271

Rear Wheelhouse Liner Assembly............... 272

Spoiler Assembly 273

Bottom Deflector...................................... 273

Mirrors...275

Specifications 275

Torque 275

Service Procedures.. 276

Exterior Mirror Assembly 276

Exterior Rearview Mirror Glass 276

Exterior Mirror Cover............................... 277

Manual anti-dazzle Interior Rearview Mirror... 277

Roof..278

Specifications 278

Torque 278

Service Procedures.. 279

Sunroof Assembly-Linear Style Switch... 279

Sunroof Deflector Assembly-Linear Style Switch.. 281

Front Sunroof Glass Panel-Linear Style Switch.. 281

Rear Sunroof Glass Panel-Linear Style Switch.. 282

Sunroof Sunshade-Linear Style Switch........... 282

Contents

    Sunroof Glass Panel Motor-Linear Style Switch 283
    Sunroof Sunshade Motor-Linear Style Switch 284
    Sunroof Harness-Linear Style Switch 284
    Front Sunroof Drain Pipe 285
    Rear Sunroof Drain Pipe 286
    Panoramic Sunroof Outer Weatherstrip 286
  Special Tools 288
Wipers and Washer 289
  Specifications 289
    Torque 289
  Service Procedures 290
    Wiper Blade Assembly 290
    Window Wiper Arm 291
    Window Wiper Linkage Assembly 291
    Window Wiper Motor 292
    Window Washer Reservoir Assembly 292
    Window Washing Reservoir Filler Pipe Assembly 293
    Window Washer Pump Assembly 293
    Windshield Washer Pump Hose 294
    Rear Windscreen Wiper Arm Assembly 294
    Rear Windscreen Wiper Motor 295
    Rear Washer Pipe 296
    Rear Windscreen Washer Nozzle 297
    Rain Sensor 297
  Special Tools 298
Lighting Systems 299
Lighting 299
  Service Procedures 299
    Roof Console Assembly 299
    Front Reading Lamp Assembly 300
    Front Reading Lamp Bulb 300
    Loadspace Lamp 301
Lamps 302
  Specifications 302
    Torque 302
  Service Procedures 303
    Headlamp Assembly 303
    Side Direction Indicator Lamp 303
    Headlamp Lighting Calibration 304
    Tail Lamp Assembly 304
    Rear Combination Lamp Assembly 305
    Direction Indicator Lamp Bulb 305
    Reverse Lamp Bulb 306
    Rear Fog Lamp Assembly 306
    Rear License Plate Lamp Assembly 307
    High-mounted Stop Lamp Assembly 307
    Light Sensor 308
Door Systems 309
Door Panel & Accessories 309
  Specifications 309
    Torque 309
  Service Procedures 310
    Front Door Adjustment 310
    Front Door and Hinge Assembly 311
    Driver Door Outer Handle and Lock Cylinder Assembly 312
    Front Passenger Door/Rear Door Outer Handle and Lock Cylinder Cover 313
    Driver Door Outer Handle Liner 314
    Driver Door Lock Assembly 315
    Rear Door Adjustment 316
    Rear Door and Hinge Assembly 317
    Rear Door Outer Handle Liner 318
    Rear Door Lock Assembly 319
Door Accessories 320
  Specifications 320
    Torque 320
  Service Procedures 321
    Front Door Window 321
    Front Door Window Regulator 322
    Front Door Window Regulator Control 322
    Front Door Windowsill Inner Weatherstrip 323
    Front Door Windowsill Outer Weatherstrip 324
    Front Door Window Slideway Weatherstrip 324
    Front Door Glass Rail 325
    Rear Door Window 325
    Rear Door Window Regulator 326
    Rear Door Window Regulator Control 327
    Rear Door Windowsill Inner Weatherstrip 328
    Rear Door Windowsill Outer Weatherstrip 329

Rear Door Window Frame Exterior Trim Panel 329
Rear Door Window Slideway Weatherstrip 330
Rear Door Glass Rail 330
Power Window Switch - Driver Side 331
Power Window Switch - Others 331
Door Lock Switch 332

Door Molding 333
Service Procedures 333
Front Door Interior Trim Panel and Waterproof Membrane 333
Front Door Interior Handle 334
Rear Door Interior Trim Panel and Waterproof Membrane 335
Rear Door Interior Handle 336

Body System 337

Fender 337
Specifications 337
Torque 337
Service Procedures 338
Fender 338

Front Module 339
Specifications 339
Torque 339
Service Procedures 340
Front-end Module 340

Bonnet 342
Specifications 342
Torque 342
Service Procedures 343
Hood Adjustment 343
Hood and Hinge Assembly 343
Bonnet Lock Assembly 344
Bonnet Release Cable 345
Hood strut 346
Hood Release Handle 346

Tailgate 347
Specifications 347
Torque 347
Service Procedures 348
Tailgate Adjustment 348
Tailgate and Hinge Assembly 348
Tailgate Lock Catch Assembly 350
Tailgate Lock Catch 351
Tailgate Gas Strut and Mounting Bracket 351
Tailgate Exterior Handle 352
Tailgate Upper Trim Panel 353

Charger Filler Flap 354
Specifications 354
Torque 354
Service Procedures 355
Charging Port Door Assembly 355

Body Control Module 356
Specifications 356
Torque 356
Service Procedures 357
Body Control Module (BCM) 357

Horn 358
Specifications 358
Torque 358
Service Procedures 359
Horn 359

Body Panel & Paint 361

Panel Repair 361
Roof Panel 361
Front Compartment Cover Panel 362
Dash Panel 363
Bodyside Panel 364
Front Floor 365
Rear Floor 366
Door Panel Assembly 367
Front Compartment Cover Panel Assembly 368
Tailgate Sheet Metal Assembly 369

Collision Repair 370
Body Material 370
Damage Diagnosis 371
Confirmation of Maintenance Scheme 373
Body Correction 374
Panel Repair 376
Sheet Metal Replacement 377

Paint and Coatings 381
Overview 381
Coating Process 383
General Film Coating Defects 389

Seal 393
Overview 393

Contents

- Sealing Performance Test ... 395
- Information of Sealant Positions ... 396
- Information of Gasket Positions ... 409

Corrosion Protection ... 413

- Overview ... 413
- Anti-corrosion Products and Construction ... 416

Welding Process ... 422

- Welding Process Overview ... 422
- Welding Protection Measures ... 423
- Welding Parts Remove ... 424
- OEM Welding Information ... 426

Body Dimension ... 450

- Point to Point Dimensional Information ... 450
  - Bodyside and Roof Information ... 450
  - Underbody Information ... 452
  - Rear End Information ... 453
  - Interior Information ... 454
  - Front End Information ... 456
- Gap Information ... 457
  - Body Side Information ... 457
  - Front End Information ... 458
  - Rear End Information ... 459
  - Sunroof Information ... 461

Safety and Restraints ... 463

Gateway ... 463

- Specifications ... 463
  - Torque ... 463
- Service Procedures ... 464
  - Gateway ... 464

Seat Belts ... 465

- Specifications ... 465
  - Torque ... 465
- Service Procedures ... 466
  - Front Seat Belt Assembly ... 466
  - Front Seat Belt Buckle ... 467
  - Rear Seat Belt Assembly ... 467
  - Rear Seat Belt Buckle ... 468
  - Rear Seat Middle Belt ... 468

Supplementary Restraint Systems ... 470

- Specifications ... 470
  - Torque ... 470
- Service Procedures ... 471
  - Airbag Front Impact Sensor ... 471
  - Airbag Side Impact Sensor ... 471
  - Steering Wheel Airbag ... 472
  - Instrument Panel Airbag ... 472
  - Side Curtain Airbag ... 473
  - Airbag Control Module ... 474
  - Front Passenger Airbag Disable Switch ... 474
  - Auxiliary Display Module ... 475

Park Assistant System ... 476

- Service Procedures ... 476
  - Rear Ultrasonic Sensor ... 476
  - Rear Camera ... 476
  - Around View Monitor (AVM) ... 477
  - 360 Panoramic Front View Camera ... 477
  - 360 Panoramic Side View Camera ... 478
  - 360 Panoramic Rear View Camera ... 478

Rear Drive Assist System ... 479

- Service Procedures ... 479
  - Rear Distant Object Detection Module and Sensor ... 479

Pedestrian Alert System ... 480

- Specifications ... 480
  - Torque ... 480
- Service Procedures ... 481
  - Pedestrian Alert Control Module ... 481
  - Pedestrian Alert Speaker ... 481

Vehicle Access ... 482

- Specifications ... 482
  - Torque ... 482
- Service Procedures ... 483
  - Passive Entry and Passive Start Control Module ... 483
  - Passive Entry and Passive Start Antenna - Front ... 483
  - Passive Entry and Passive Start Antenna - Middle ... 484
  - Passive Entry and Passive Start Antenna - Rear ... 484
  - Passive Entry and Passive Start Antenna - Rear Bumper Fascia ... 485
  - Passive Entry and Passive Start Antenna - Door Handle ... 485
  - Back Up Antenna ... 486

Drive Assistant System ... 487

- Service Procedures ... 487
  - Front View Camera Module ... 487
  - Front Detection Radar Module ... 487
- Special Tools ... 489

Contents

Information and Entertainment.................................. 491

Entertainment and Navigation 491

Specifications 491

Torque 491

Service Procedures.. 492

Front Infotainment Control Module (FICM) 492

DAB Module 493

Front Door Tweeter.................................. 493

Front Door Woofer 494

Rear Door Woofer.................................... 494

ECall Speaker 495

Microphone... 495

Communication Module (TBOX)................ 496

ECall Communication Module..................... 496

ECall Switch 497

Communication Module Antenna 497

Roof Antenna.. 498

Displays and Gauges...499

Specifications 499

Torque 499

Service Procedures.. 500

Instrument Pack 500

Power & Signal................................ 501

Low Voltage Fusebox 501

Specifications 501

Torque 501

Service Procedures.. 502

Front Compartment Fuse Box 502

Battery Fuse Box & Management System..503

Specifications 503

Torque 503

Service Procedures.. 504

Positive Battery Cable................................ 504

Negative Battery Cable.............................. 504

Battery.. 505

Battery Sensor 505

Battery Tray 506

Battery Tray Bracket.................................. 506

Low Voltage Harness 507

Service Procedures.. 507

Instrument Harness 507

Body Harness.. 508

Front Door Harness.................................. 517

Rear Door Harness 518

Centre Console Harness 518

Driver Seat Harness 519

Power Socket 520

Service Procedures.. 520

12V Power Socket..................................... 520

High Voltage Harness 521

Specifications 521

Torque 521

Service Procedures.. 522

High-voltage Power Distribution Unit (PDU) 522

Combined Charging Unit High-voltage Harness 523

Traction Battery High-voltage Harness 524

PDU to A/C Compressor to Power Electronic Box High-voltage Harness........... 525

Heater High-voltage Harness 526

Heater High-voltage Harness 2.................... 528

Wireless Charging Of Mobile Phone...............529

Specifications 529

Torque 529

Service Procedures.. 530

Mobile wireless charging module 530

Glossary List 531

General Information

General Precautions

Dangerous Substances

Modern vehicles contain many materials or liquids which if not handled with care can be hazardous to both personal health and the environment.

Warning: Many liquids and other substances used in vehicles are poisonous and should under no circumstances be consumed and should, as far as possible, be kept from contact with the skin. These liquids and substances include acid, antifreeze, brake fluid, fuel, windscreen washer additives, lubricants, refrigerants and various adhesives.

Warning: Always read any instructions that accompany, are printed on the label, or are stamped on components very carefully. Follow the instructions and guideline carefully in order to avoid damage and personal injury.

Synthetic Rubber

Many O rings, seals, hoses, flexible pipes and other similar items which appear to be natural rubber, are in fact, made of synthetic materials called Fluoroelastomers. Under normal operating conditions this material is safe and does not present a health hazard. However, if the material is damaged by fire or excessive heating, it can break down and produce highly corrosive Hydrofluoric acid.

Contact with Hydrofluoric acid can cause serious burns on contact with skin. If skin contact does occur:

- Remove any contaminated clothing immediately.
- Irrigate affected area of skin with a copious amount of cold water or limewater for 15 to 60 minutes.
- Obtain medical assistance immediately.

Should any material be in a burnt or overheated condition, handle with extreme caution and wear protective clothing (seamless industrial gloves, protective apron etc.).

Decontaminate and dispose of gloves immediately after use.

Lubricating Fluids

Avoid excessive skin contact with used lubricating oils and always adhere to the health protection precautions.

Warning: Avoid excessive skin contact with used lubricating fluids. Used lubricating fluids contains potentially harmful contaminants which may cause skin cancer or other serious skin disorders.

Warning: Avoid excessive skin contact with mineral oil. Mineral oils remove the natural fats from the skin, leading to dryness, irritation and dermatitis.

Health Protection Precautions

The following precautions should be observed at all times:

- Wear protective clothing, including impervious gloves when practicable.
- Avoid prolonged and repeated contact with lubricating oil.
- Do not put oily rags in pockets.
- Avoid contaminating clothes (particularly those next to the skin) with lubricating oil.
- Overalls must be cleaned regularly. Discard heavily soiled clothing and oil impregnated footwear.
- First aid treatment should be obtained immediately for open cuts and wounds.
- Apply barrier creams before each work period to help prevent lubricating oil from contaminating the skin.
- Wash with soap and water to ensure all lubricating oil is removed (proprietary skin cleansers and nail brushes will help).
- Use moisturisers after cleaning; preparations containing lanolin help replace the skin's natural oils which have been removed.
- Do not use petrol/gasoline, kerosene, diesel fuel, lubricating oil, thinners or solvents for cleaning skin.
- Where practicable, degrease components prior to handling.
- If skin disorders develop, obtain medical advice without delay.
- Wear eye protection (e.g. goggles or face shield) if there is a risk of eye contamination. Eye wash facilities should be provided in close vicinity to the work area.

Safety Precautions

Lift

Caution: It is best to use the lift when working under the vehicle. Be sure to hold the wheels with chocks and apply parking brake.

Always use the recommended lifting points.

Always ensure that any lifting apparatus has sufficient load capacity for the weight to be lifted.

Ensure the lift is standing on level ground during lifting or jacking.

Apply the parking brake and fit wedges to secure wheels.

Warning: Do not work on or under a vehicle supported only by a jack.Always support the vehicle on safety stands.

Do not leave tools, lifting equipment, spilt oil, etc. around or on the work bench area.

Always keep a clean and tidy work area.

Brake Shoes and Pads

Always fit the correct grade and specification of brake linings. When renewing brake pads and brake shoes, always replace as complete axle sets.

Brake Hydraulic System

Observe the following procedures when working on the brake system:

- Apply two spanners to loosen or tighten brake pipes/tube connectors.
- Ensure that hoses run in a natural curve and are not twisted or deformed.
- Fit brake pipes securely in their retaining clips and ensure that the pipe cannot contact a potential chafing point.
- Containers of brake fluids must be kept clean.
- Do not store brake fluid in an unsealed container, otherwise it will absorb moisture in the air, which may lower its boiling point, and in this condition it is likely to cause danger in its use.
- Do not allow brake fluid to be contaminated by mineral oil, or put new brake fluid in a container which has previously contained mineral oil.
- Do not reuse brake fluid drained from the brake system.
- Always use clean brake fluid or a recommended alternative to clean hydraulic components.
- After disconnecting brake pipes and hoses, immediately fit suitable end caps or plugs to prevent the ingress of dirt.
- Only use the correct brake fittings with compatible threads.
- Maintain absolute cleanliness when working with hydraulic components.

Cooling System Caps and Plugs

When the cooling system is still hot, especially when it is overheated, take particular care if removing the expansion tank cap, coolant drain pipe or bleed screws. To avoid the possibility of burns, wait for the cooling system to cool down before removal.

Precautions for High Voltage

Basic Requirements

Basic requirements for related precautions for high voltage in vehicle are as follows:

- ALWAYS ensure the correct PPE is worn when working on, or with HV components.
- Unrelated and non qualified persons must be prevented from coming into contact with the vehicle during repair.
- DO NOT touch any components that carry the high voltage warning labels without the correct PPE or training.
- If it is necessary to disassemble the relevant high-voltage components, any personnel must have the correct high voltage training and qualifications.
- When operating high-voltage components, the operator must wear protective equipment and must also use insulated gloves.
- When operating exposed high-voltage system components, the operator must use a multimeter to measure if there is high voltage, no operations should be undertaken until the vehicle is made, and proven to be safe and not subject to high voltage.
- Before carrying out any work on vehicles featuring high voltage systems you must switch off the vehicle power system/START/STOP Switch. If there is a need to disassemble the high-voltage system, wait for 5 minutes before proceeding.
- When disassembling or assembling electrical components, the 12V power supply and the manual service switch on the high-voltage battery pack must be disconnected.
- After any removal and refitting of any high voltage components it is necessary to ensure correct installation and connection of all high-voltage components and ensure their reliability before reconnecting the high-voltage power.
- All high-voltage components MUST have a robust and secure ground connection.

Warning: Only persons that hold the correct high voltage training certificates and qualifications are allowed to work on high voltage systems and components.

Warning: Non qualified staff are NOT permitted to dismantle high voltage systems or components (including, ESS, Electric Drive Transmission, PEB, PDU, EACP, PTC units, HV harnesses, CCU, DCDC, Charging sockets etc).

Warning: Prior to opening any high voltage circuits the systems MUST be checked using a suitable multi meter to ensure they carry no high voltage current. Where there is need to work with the high voltage system is essential that the correct 'make safe' procedure is followed - see Manual Service Disconnect procedure in the Service Repair manual. After disconnecting the Manual Service Disconnect (MSD), always wait 5 minutes prior to commencing any checks for residual voltage etc.

Caution: When removing or servicing any parts of the high voltage system it is essential that no liquids enter, contaminate or are spilled on components, harnesses or connectors.

Environmental Precautions

Overview

This section provides general information which can help to reduce the environmental impacts from the activities carried out in workshops.

Emissions to Air

Many of the activities that are carried out in workshops emit gases and fumes which contribute to global warming, depletion of the ozone layer and/or the formation of photochemical smog at ground level. By considering how the workshop activities are carried out, these gases and fumes can be minimised, thus reducing the impact on the environment.

Solvents

Some of the cleaning agents used are solvent based and will evaporate to atmosphere if used improperly, or if cans are left unsealed. All solvent containers should be firmly closed when not needed and solvent should be used sparingly. Suitable alternative materials may be available to replace some of the commonly used solvents. Similarly, many paints are solvent based and the spray should be minimised to reduce solvent emissions.

Refrigerant

Discharge and replacement of refrigerant from air conditioning units should only be carried out by using the correct equipment.

Diluent:

- Keep lids on containers of solvents;
- Only use the minimum quantity;
- Consider alternative materials;
- Minimise over-spray when painting.

Gases:

- Use the correct equipment for collecting refrigerants;
- Don't burn rubbish on site.

Discharges to Water

Lubricating oil, solvent, acids, hydraulic oil, antifreeze and other such substances should never be poured down the drain and every precaution must be taken to prevent spillage reaching the drains.

Handling of such materials must take place well away from the drains and preferably in an area with a kerb or wall around it, to prevent discharge into the drain. If a spillage occurs, it should be soaked up immediately. Having a spill kit available will make this easier.

Checklist

Always adhere to the following disposal and spillage prevention instructions.

- Never pour anything down a drain without first checking that it is environmentally safe to do so, and that it does not contravene any local regulations.
- Store liquids in a walled area.
- Make sure that taps on liquid containers are secure and cannot be accidentally turned on.
- Protect bulk storage tanks from vandalism by locking the valves.
- Transfer liquids from one container to another in an area away from open drains.
- Ensure lids are replaced securely on containers.
- Have spill kits available near to points of storage and handling of liquids.

Spill Kits

Special materials are available to absorb a number of different substances. They can be in granular form, ready to use and bought in convenient containers for storage. Disposal of used spill-absorbing material is dealt with in 'Waste Management' section.

Land Contamination

Lubricating oil, solvents, etc. can contaminate any soil that they are allowed to contact. Such materials should never be disposed of by pouring onto soil and every precaution must be taken to prevent spillage reaching soil. Waste materials stored on open ground could also leak, or have polluting substances washed off them that would contaminate the land. Always store these materials in suitable robust containers.

Checklist

Always adhere to the following:

- Don't pour or spill anything onto the soil or bare ground.
- Don't store waste materials on bare ground.

Local Issues

A number of environmental issues will be of particular concern to residents and other neighbors close to the site. The sensitivity of these issues will depend on the proximity of the site and the layout and amount of activity carried on at the site.

Car alarm testing, panel beating, hammering and other such noisy activities should, whenever possible, be carried out indoors with doors and windows shut or as far away from residential area as possible.

Be sensitive to the time of day when these activities are carried out and minimise the time of the noisy operation, particularly in the early morning and late evening.

Another local concern will be the smell from the various materials used. Using less solvent, paint and petrol could help prevent this annoyance.

Local residents and other business users will also be concerned about traffic congestion, noise and exhaust fumes, be sensitive to these concerns and try to minimise inconvenience from deliveries, customers and servicing operations.

Checklist

Always adhere to the following:

- Identify where the neighbors who are likely to be affected are situated;
- Minimise noise, smells and traffic nuisance.
- Prevent waste pollution by disposing of waste in the correct container.
- Have waste containers emptied regularly.

Waste Management

One of the major ways that pollution can be reduced is by the careful handling, storage and disposal of all waste materials that occur on sites. This means that it is necessary to not only know what the waste materials are, but also to have the necessary documentation and to know local regulations that apply.

Handling and Storage of Waste

They should be stored in such a way as to prevent the escape of the material to land, water or air.

They must also be segregated into different types of waste e.g. oil, metals, batteries, used vehicle components. This will prevent any reaction between different materials and assist in disposal.

Disposal of Waste

Disposal of waste materials must only be to waste carriers who are authorized to carry those particular waste materials and have all the necessary documentation. The waste carrier is responsible for ensuring that the waste is taken to the correct disposal sites.

Dispose of waste in accordance with the following guidelines:

- Hydraulic fluid, anti-freeze and lubricating oil: keep separate and dispose of to specialist contractor.
- Refrigerant: collect in specialist equipment and reuse.
- Detergents: safe to pour down the foul drain if diluted.
- Paint, thinners: keep separate and dispose of to specialist contractor.
- Components: send back to supplier for refurbishment, or disassemble and reuse any suitable parts. Dispose of the remainder in ordinary waste.
- Small parts: reuse any suitable parts, dispose of the remainder in ordinary waste.
- Metals: can be sold if kept separate from general waste.
- Tyres: keep separate and dispose of to specialist contractor.
- Packaging: compact as much as possible and dispose of in ordinary waste.
- Asbestos material: keep separate and dispose of to specialist contractor.
- Oily wastes (e.g. rags, used spill kit material): keep separate and dispose of to specialist contractor.
- Air filters: keep separate and dispose of to specialist contractor.
- Rubber/plastics: dispose of in ordinary waste.
- Water pipes: dispose of in ordinary waste.
- Batteries: keep separate and dispose of to specialist contractor.
- Airbags - explosives: keep separate and dispose of to specialist contractor.
- Electrical components: send back to supplier for refurbishment, or disassemble and reuse any suitable parts. Dispose of the remainder in ordinary waste.
- Catalysts: can be sold if kept separate from general waste.
- Used spill-absorbing material: keep separate and dispose of to specialist contractor.

General Instructions for Assembly

Component Removal

Whenever possible, clean components and surrounding area before removal.

- Blank off openings exposed by component removal.
- Immediately seal fuel, oil or hydraulic lines when apertures are exposed; use plastic caps or plugs to prevent loss of fluid and ingress of dirt.
- Close the open ends of oilways exposed by component removal with tapered hardwood plugs or conspicuous plastic plugs.
- Immediately a component is removed, place it in a suitable container; use a separate container for each component and its associated parts.
- Clean bench and provide marking materials, labels and containers before dismantling a component.

Dismantling

Observe scrupulous cleanliness when dismantling components, particularly when brake, fuel or hydraulic system parts are being worked on. A particle of dirt or a cloth fragment could cause a serious malfunction if trapped in these systems.

- Blow out all tapped holes, crevices, oilways and fluid passages with an air line. Ensure that any O-rings used for sealing are correctly replaced or renewed, if disturbed during the process.
- Use marking ink to identify mating parts and ensure correct reassembly. Do not use a centre punch or scriber to mark parts, they could initiate cracks or distortion in marked components.
- Wire together mating parts where necessary to prevent accidental interchange (e.g. roller bearing components).
- Attach labels to all parts which are to be renewed, and to parts requiring further inspection before being passed for reassembly; place these parts in separate containers from those containing parts for rebuild.
- Do not discard a part due for renewal until after comparing it with a new part, to ensure that its correct replacement has been obtained.

Cleaning

Always use the recommended cleaning agent or equivalent. Ensure that adequate ventilation is provided when volatile degreasing agents are being used. Do not use degreasing equipment for components containing items which could be damaged by the use of this process.

General Inspection

All components should be inspected for wear or damage before being reassembled.

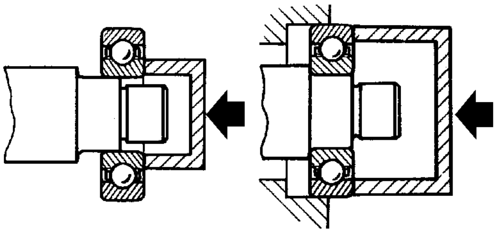
- Never inspect a component for wear or dimensional check unless it is absolutely clean; a slight smear of grease can conceal an incipient failure.
- When a component is to be checked dimensionally against recommended values, use the appropriate measuring equipment (surface plates, micrometers, dial gauges etc.). Ensure the measuring equipment is calibrated and in good serviceable condition.
- Reject a component if its dimensions are outside the specified tolerances, or if it appears to be damaged.
- A part may be refitted if its critical dimension is exactly to its tolerance limit and it appears to be in satisfactory condition. Use ‘Plastigauge' for checking bearing surface clearances.

Ball and Roller Bearings

Overview

When removing and installing bearings, ensure that the following practices are observed to ensure component serviceability.

- Remove all traces of lubricant from bearing under inspection by cleaning with a suitable degreasant; maintain absolute cleanliness throughout operations.
- Hold inner race of bearing between finger and thumb of one hand and spin outer race to check that it revolves absolutely smoothly. Repeat, holding outer race and spinning inner race.
- Rotate outer ring gently with a reciprocating motion, while holding inner ring; feel for any check or obstruction to rotation. Reject bearing if action is not perfectly smooth.
- Lubricate bearing with generous amounts of lubricant appropriate to installation.
- Inspect shaft and bearing housing for discoloration or other markings which indicate movement between bearing and housing.
- Ensure that shaft and housing are clean and free from burrs before fitting bearing.
- If one bearing of a pair shows an imperfection, it is advisable to replace both with new bearings; an exception could be if the faulty bearing had covered a low mileage, and it can be established that damage is confined to only one bearing.
- Never refit a ball or roller bearing without first ensuring that it is in a fully serviceable condition.
- When hub bearings are removed or displaced, new bearings must be fitted; do not attempt to refit the old hub bearings.
- When fitting a bearing to a shaft, only apply force to the inner ring of the bearing. When fitting a bearing into a housing, only apply force to the outer ring of the bearing.



S003040

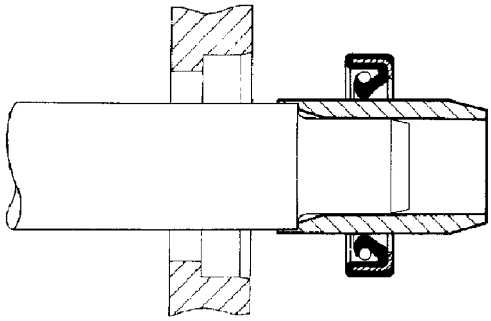
- In the case of grease lubricated bearings (eg. hub bearings) fill the space between bearing and outer seal with the recommended grade of grease before fitting seal.
- Always mark components of separable bearings (eg. taper roller bearings) when dismantling, to ensure correct reassembly. Never fit new rollers in a used outer ring; always fit a complete new bearing assembly.

Oil Seals

General

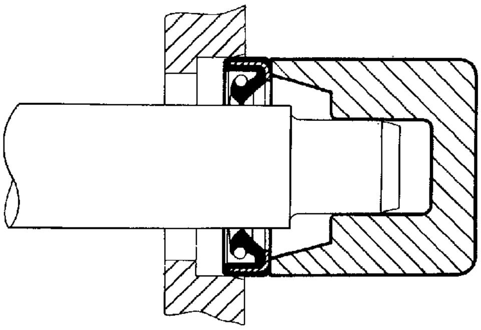
Always renew oil seals which have been removed from their working location (whether as an individual component or as part of an assembly). NEVER use a seal which has been improperly stored or handled, such as hung on a hook or nail.

- Carefully examine seal before fitting to ensure that it is clean and undamaged.
- Ensure the surface on which the new seal is to run is free of burrs or scratches. Renew the component if the original sealing surface cannot be completely restored.
- Protect the seal from any surface which it has to pass when being fitted. Use a protective sleeve or tape to cover the relevant surface.
- Lubricate the sealing lips with a recommended lubricant before use to prevent damage during initial use. On dual lipped seals, smear the area between the lips with grease.
- If a seal spring is provided, ensure that it is fitted correctly. Place lip of seal towards fluid to be sealed and slide into position on shaft. Use fitting sleeve where possible to protect sealing lip from damage by sharp corners, threads or splines. If a fitting sleeve is not available, use plastic tube or tape to prevent damage to the sealing lip.



S003041

- Grease outside diameter of seal, place square to housing recess and press into position using great care, and if possible a 'bell piece' to ensure that seal is not tilted. In some cases it may be preferable to fit seal to housing before fitting to shaft. Never let weight of unsupported shaft rest in seal.



S003042

- Use the recommended service tool to fit an oil seal. If the correct service tool is not available, use a suitable tube approximately 0.4 mm (0.015 in.) smaller than the outside diameter of the seal. Use a hammer VERY GENTLY on drift if a suitable press is not available.
- Press or depress the oil seal to the bottom of the bearing seat, and the edge of the oil seal faces the lubricant. Lubricate the shaft shoulder of the sealing surface to ensure that the oil seal is not inclined in the bearing seat.

Junction and Mating Face

General

Fit joints dry unless specified otherwise.

- Always use the correct gaskets as specified.
- When sealing compound is used, apply in a thin uniform film to metal surfaces; take care to prevent sealing compound from entering oilways, pipes or blind tapped holes.
- If gaskets and/or sealing compound is recommended for use; remove all traces of old sealing compound prior to reassembly. Do not use a tool which will damage the joint faces and smooth out any scratches or burrs using an oil stone.
- Prior to reassembly, blow through any pipes, channels or crevices with compressed air.

Locking Device

General

Always replace locking devices with one of the same design.

Tab Washers

Always release locking tabs and fit new locking washers. Do not re-use locking tabs.

Locking Nuts

Always use a backing spanner when loosening or tightening locking nuts, brake and fuel pipe unions.

Roll Pins

Always fit new roll pins of an interference fit in the hole.

Circlips

Always fit new circlips of the correct size for the groove.

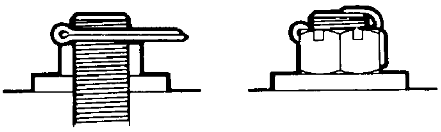
Keys and Keyways

Remove burrs from edges of keyways with a fine file and clean thoroughly before attempting to refit key.

Clean and inspect key closely; keys are suitable for refitting only if indistinguishable from new, as any indentation may indicate the onset of wear.

Split Pins

Always fit new split-pins of the correct size for the hole in the bolt or stud.



S003043

Screw Threads

General

Metric threads to ISO standards are used.

Damaged nuts, bolts and screws must always be discarded. Cleaning damaged threads with a die or tap impairs the strength and fit of the threads and is not recommended.

Always ensure that replacement bolts are at least equal in strength to those replaced.

Castellated nuts must not be loosened to accept a split-pin, except in recommended cases when this forms part of an adjustment.

Do not allow oil or grease to enter blind threaded holes. The hydraulic action on screwing in the bolt or stud could split the housing.

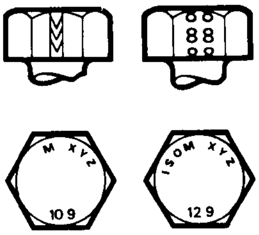
Always tighten a nut or bolt to the recommended torque figure. Damaged or corroded threads can affect the torque reading.

To check or re-tighten a bolt or screw to a specified torque figure, first loosen a quarter of a turn, then re-tighten to the correct torque figure.

Oil thread lightly before tightening to ensure a free running thread, except in the case of threads treated with sealant/lubricant, and selflocking nuts.

Fastener Identification

Bolt Identification

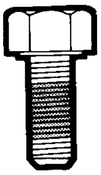


S003044

An ISO metric bolt or screw made of steel and larger than 6 mm in diameter can be identified by either of the symbols ISO M or M embossed or indented on top of the bolt head.

In addition to marks identifying the manufacturer, the top of the bolt head is also marked with symbols indicating the strength grade, e.g. 8.8; 10.9; 12.9; 14.9. As an alternative, some bolts and screws have the M and strength grade symbol stamped on the flats of the hexagon.

Encapsulated Bolts and Screws



S003045

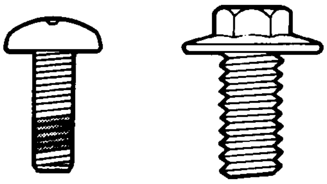
Encapsulated bolts and screws have a microencapsulated locking agent pre-applied to the thread. They are identified by a coloured section which extends 360° around the thread. The locking agent is released and activated by the assembly process and is then chemically cured to provide the locking action.

Unless a specific repair procedure states otherwise, encapsulated bolts may be reused providing the threads are undamaged and the following procedure is adopted:

- Remove loose adhesive from the bolt and housing threads.
- Ensure threads are clean and free of oil and grease.
- Apply an approved locking agent.

An encapsulated bolt may be replaced with a bolt of equivalent specification provided it is treated with an approved locking agent.

Self-locking Bolts and Screws



S003046

Self-locking bolts and screws, i.e. nylon patched or trilobular thread can be reused providing resistance can be felt when the locking portion enters the female thread.

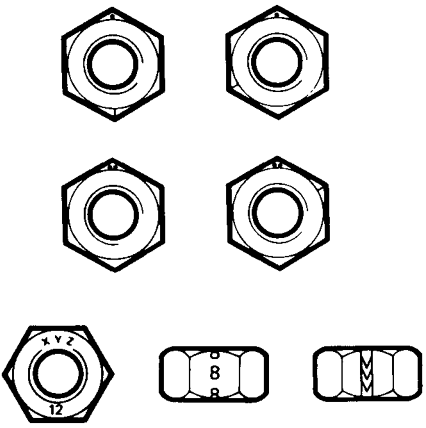
Nylon patched bolts and screws have a locking agent pre-applied to the threads. They are identified by the presence of a coloured section of thread which extends for up to 180° around the thread.

Trilobular bolts (i.e. Powerlok) have a special thread form which creates a slight interference with the thread of the hole or nut into which it is screwed.

DO NOT reuse self-locking fasteners in critical locations (e.g. engine bearings, flywheel). Always use the correct replacement self-locking nut, bolt or screw.

DO NOT fit non self-locking fasteners in applications where a self-locking nut, bolt or screw is specified.

Nut Identification



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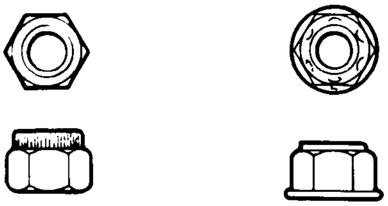
A nut with an ISO metric thread is marked on one face or on one of the flats of the hexagon with the strength grade symbol 8, 12, or 14. Some nuts with a strength grade 4, 5 or 6 are also marked and some have the metric symbol M on the flat opposite the strength grade marking.

When tightening a slotted or castellated nut, never loosen it to insert a split pin except where recommended as part of an adjustment. If difficulty is experienced, alternative washers or nuts should be selected, or the washer thickness reduced.

Where bearing preload is involved, nuts should be tightened in accordance with special instructions.

Self-locking Nuts



S003048

Self-locking nuts, e.g. nylon insert or deferred thread nuts, can be reused providing resistance can be felt when the locking portion of the nut passes over the thread of the bolt or stud.

Where self-locking nuts have been removed, it is advisable to replace them with new ones of the same type.

Don't use non self-lock nuts in the area where self-lock nuts must be used.

Flexible Pipe and Hose

General

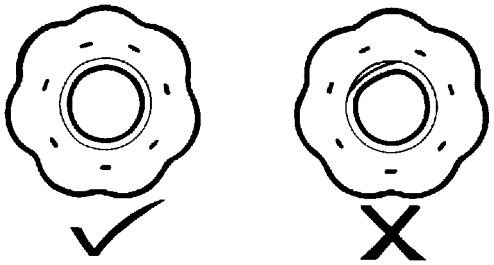
When removing and installing flexible hydraulic pipes and hoses, ensure that the following practices are observed to ensure component serviceability.

- Clean end fittings and the area surrounding them as thoroughly as possible.
- Obtain appropriate plugs or caps before detaching hose end fittings, so that the ports can be immediately covered to prevent the ingress of dirt.

  Clean hose externally and blow through with airline. Examine carefully for cracks, separation of plies, security of end fittings and external damage. Reject any faulty hoses.
- When refitting a hose, ensure that no unnecessary bends are introduced, and that hose is not twisted before or during tightening of union nuts.
- Fit a cap to seal a hydraulic union and a plug to its socket after removal to prevent ingress of dirt.
- Absolute cleanliness must be observed with hydraulic components at all times.

  After any work on hydraulic systems, carefully inspect for leaks underneath the vehicle while a second operator applies maximum brake pressure to the brakes (engine running) and operates the steering.

Flexible Pipes



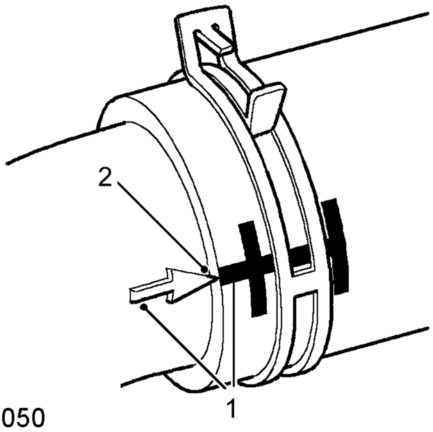
S003049

All flexible pipes are made up of two laminations, an armoured rubber outer sleeve and an inner viton core. If any of the flexible pipes have been disconnected, it is imperative that the internal bore is inspected to ensure that the viton lining has not become separated from the armoured outer sleeve. A new pipe must be fitted if separation is evident.

Cooling System Hoses

The following precautions MUST be followed to ensure that integrity of cooling hoses and their connections to system components are maintained.

Hose Orientation and Connection



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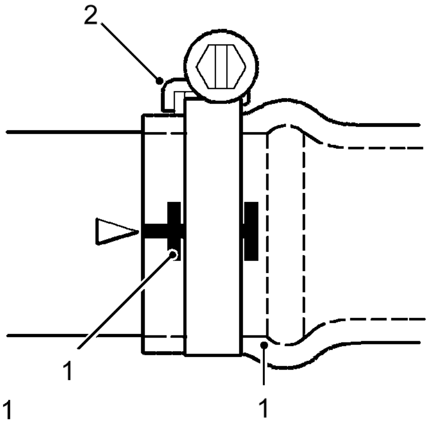
Correct orientation of cooling hoses is important in ensuring that the hose does not become fatigued or damaged through contact with adjacent components. Where 'timing' marks (1) are provided on the hose and corresponding connection, these must be used to ensure correct orientation. Hoses must be pushed fully onto their connection points. Usually, a moulded form (2) on the stub pipe provides a positive indicator.

Hose Clip



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Markings (1) are usually provided on the hose to indicate the correct clip position. If no markings are provided, position the clip directly behind the retaining lip at the end of the stub as shown. Worm drive clips should be oriented with the crimped side of the drive housing (2) facing towards the end of the hose, or the hose may become pinched between the clip and the stub pipe retaining lip. Worm drive clips should be tightened to 3 Nm unless otherwise stated. Ensure that hose clips do not foul adjacent components.

Heat Protection

Always ensure that heatshields and protective sheathing are in good condition. Replace if damage is evident. Particular care must be taken when routing hoses close to hot engine components, such as the exhaust manifold and the Exhaust Gas Recirculation (EGR) pipe. Hoses will relax and deflect slightly when hot; ensure this movement is taken into account when routing and securing hoses.

Electrical Precautions

General

The following guidelines are intended to ensure the safety of the operator while preventing damage to the electrical and electronic components fitted to the vehicle. Where necessary, specific precautions are detailed in the individual procedures of this manual.

Equipment

Prior to commencing any test procedure on the vehicle ensure that the relevant test equipment is working correctly and any harness or connectors are in good condition. It is particularly important to check the condition of the lead and plugs of mains operated equipment.

Polarity

Never reverse connect the vehicle battery and always ensure the correct polarity when connecting test equipment.

High Voltage Circuits

Whenever disconnecting live HT circuits always use insulated pliers and never allow the open end of the HT lead to contact other components, particularly ECUs. Exercise caution when measuring the voltage on the coil terminals while the engine is running, high voltage spikes can occur on these terminals.

Connectors and Harnesses

The engine compartment of a vehicle is a particularly hostile environment for electrical components and connectors:

- Always ensure electrically related items are dry and oil free before disconnecting and connecting test equipment.
- Ensure disconnected multiplugs and sensors are protected from being contaminated with oil, coolant or other solutions. Contamination could impair performance or result in catastrophic failure.
- Never force connectors apart using tools to prise apart or by pulling on the wiring harness.
- Always ensure locking tabs are disengaged before disconnection, and match orientation to enable correct reconnection.
- Ensure that any protection (covers, insulation etc.) is replaced if disturbed.

Having confirmed a component to be faulty:

- off the START/STOP Switch and disconnect the battery.
- Remove the component and support the disconnected harness.
- When replacing the component keep oily hands away from electrical connection areas and push connectors home until any locking tabs fully engage.

Battery Disconnection

Before disconnecting the battery, disable the alarm system and switch off all electrical equipment.

Caution: To prevent damage to electrical components, always disconnect the battery when working on the vehicle's electrical system. The ground lead must be disconnected first and reconnected last.

Caution: Always ensure that battery leads are routed correctly and are not close to any potential chafing points.

Battery Charging

Always ensure any battery charging area is well ventilated and that every precaution is taken to avoid naked flames and sparks.

Disciplines

Remove the handset prior to making any connection or disconnection in the system to prevent electrical surges caused by disconnecting ‘live' connections damaging electronic components.

Ensure hands and work surfaces are clean and free of grease, swarf, etc. Grease collects dirt which can cause electrical tracking (shortcircuits) or high resistance contacts.

When handling printed circuit boards, treat with care and hold by the edges only; note that some electronic components are susceptible to body static.

Connectors should never be subjected to forced removal or refit, especially inter-board connectors. Damaged contacts can cause short-circuit and open-circuit fault conditions.

Prior to commencing test, and periodically during a test, touch a good vehicle body earth to discharge static charge. Some electronic components are vulnerable to the static electricity that may be generated by the operator.

Electrical Connector Lubrication

In order to prevent corrosion some wiring harness multiplug connectors are treated using special lubricant or grease during assembly. Any maintenance, repair or replacement carried out on these connectors will destroy the effect of the lubricant, it is strongly advised that if a connector is disturbed then any special lubrication or grease is re-applied.

Supplementary Restraint System Precautions

General Precautions

The SRS system contains components which could be potentially hazardous to the service engineer if not serviced and handled correctly. The following guidelines are intended to alert the service engineer to potential sources of danger and emphasise the importance of ensuring the integrity of **SRS** components fitted to the vehicle.

Warning: It is imperative that before any work is undertaken on the SRS system the appropriate information is read thoroughly.

Warning: The airbag module contains sodium azide which is poisonous and extremely flammable. Contact with water, acid or heavy metals may produce harmful or explosive compounds. Do not dismantle, incinerate or bring into contact with electricity, before the unit has been deployed.

Warning: Always replace a seat belt assembly that has withstood the strain of a severe vehicle impact, or if the webbing shows signs of fraying.

Warning: Always disconnect the vehicle battery before carrying out any electric welding on a vehicle fitted with an SRS system.

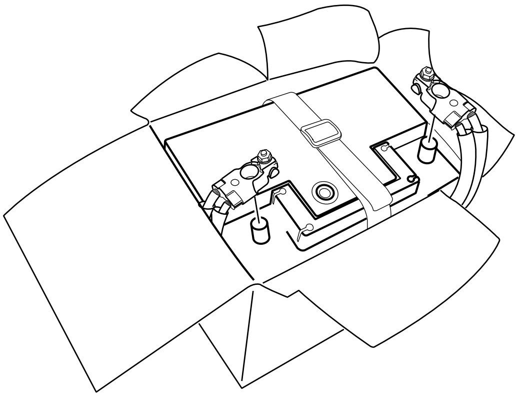
Caution: Do not expose an airbag module or seat belt pre-tensioner to heat exceeding 85 °C.

It should be noted that these precautions are not restricted to operations performed when servicing the **SRS** system, the same care must be exercised when working on ancillary systems and components located in the vicinity of the **SRS** components; these include, but are not limited to:

- *Steering system* steering wheel airbag, rotary coupler.
- *Front fascia* passenger front airbag.
- *Interior trim* **ICS** Head Curtain Airbags (‘A'-post trim, ‘B'-post upper trim, grab handles, headlining above front doors) ; **SRS** Electronic Control Unit (ECU) (beneath centre console); side impact crash sensors (under carpet beneath front seats)
- *Seats* side (thorax) airbags; front seat belt pretensioner.
- *Electrical system*–**SRS** harnesses, link leads and connectors.

Making the System Safe

Before working on, or in the vicinity of **SRS** components, ensure the system is rendered safe by performing the following procedures:



S003092

- Remove the handset from the vehicle.
- Disconnect both battery leads, earth lead first.
- Wait 10 minutes for **SRS ECU** the SRS ECU back-up power circuit to discharge.

The **SRS** system uses energy reserve capacitors to keep the system active in the event of electrical supply failure under crash conditions. It is necessary to allow the capacitor sufficient time to discharge (10 minutes) in order to avoid the risk of accidental deployment.

Caution: Disconnect the battery before starting the SRS operation. Disconnect the battery negative terminal first. DO NOT disconnect the battery in the reverse order.

Installation

In order to ensure system integrity, it is essential that the SRS system is regularly checked and maintained **SRS** so that it is ready for effective operation in the event of a collision. Carefully inspect SRS components before installation. **SRS** Do not install a part that shows signs of being dropped or improperly handled, such as dents, cracks or deformation.

Warning: The integrity of the SRS system is critical for safety reasons.

Ensure the following precautions are always adhered to:

- Never install used SRS components from another vehicle **SRS** or attempt to repair an **SRS** component.
- Never use the SRS parts without a clear identification **SRS** label.
- Never use an airbag or **SRS** ECU that has been dropped.
- When repairing an SRS system only use **SRS** genuine new parts.
- Never apply electrical power to an SRS component unless instructed to do **SRS** so as part of an approved test procedure.
- Ensure the bolts are tightened to the correct torque. Always use new fixings **SRS** when replacing SRS components.
- Ensure the **SRS ECU** is always installed correctly. There must not be any gap between the **SRS ECU** and the bracket to which it is mounted. An incorrectly mounted **SRS ECU** could cause the system to malfunction.
- Do not supply power to the **SRS ECU** before all **SRS** components connected.

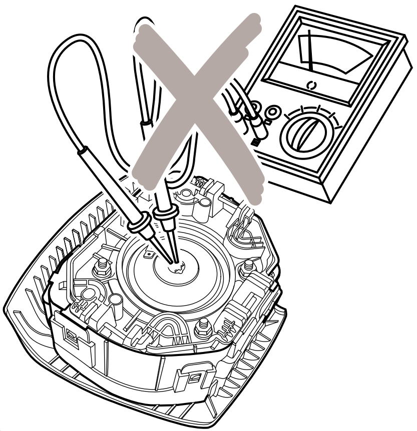
Caution: Ensure SRS components are not contaminated with oil, grease, detergent or water.

Caution: Torque wrenches should be regularly checked for accuracy to ensure that all fixings are tightened to the correct torque.

Caution: Following seat belt pretensioner deployment, the seat belts can still be used as conventional seat belts, but will need to be replaced as soon as possible to re-establish full SRS protection.

Caution: If the SRS component is to be replaced, the bar code of the new unit must be recorded.

SRS Component Testing Precautions



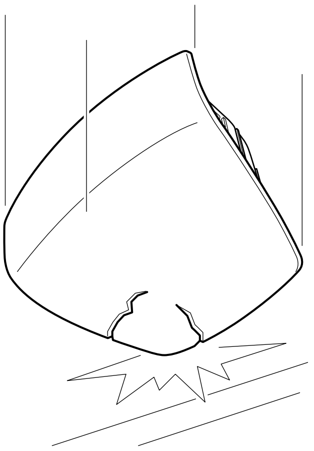
S003080

The **SRS** components are triggered using relatively low operating currents, always adhere to the following precautions:

Warning: Do not use a multi-meter or other general purpose test equipment on SRS system components or accidental deployment may occur. Only use the recommended diagnostic equipment to diagnose system faults.

Warning: Do not use electrical test equipment on the SRS harness while it is connected to any of the SRS system components. It may cause accidental deployment and personal injury.

Handling and Storage



S003081

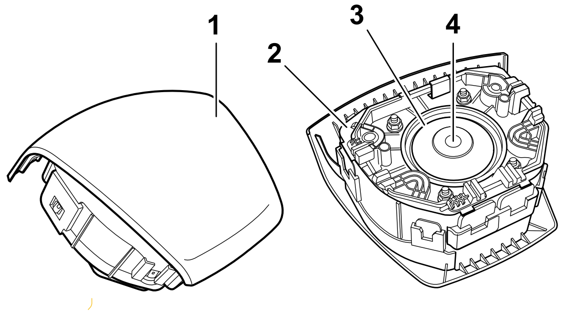
Always comply with the following handling precautions.

Warning: SRS components are sensitive and potentially hazardous if not handled correctly; always comply with the following handling precautions:

- ***The SRS ECU (SDM) and airbags must be stored in a cabinet in a dry room at normal room temperatures not exceeding 85 °C. Ensure that heating, fire, water and other chemical corrosive substances cannot contaminate the stored SRS components.***
- ***For safety reasons, do not store inflammable goods close to the area where the SRS components are stored.***
- ***Keep new airbag modules in the original packaging, until just before fitting.***
- ***The storage area must comply with all legal requirements. It must have suitable fire extinguishers or other fire extinguishing equipment.***
- ***Never drop an SRS component. The airbag diagnostic control unit is a particularly shock sensitive device and must be handled with extreme care.***
- ***Never wrap your arms around an airbag module. If an airbag module has to be carried, hold it by the cover, with the cover uppermost and the base away from your body.***
- ***Never transport airbag modules or seat belt pre-tensioners in the cabin of a vehicle.***

Warning: Never attach anything to an airbag cover or any trim component covering an airbag module. Do not allow anything to rest on top of an airbag module.

Caution: Do not apply grease or cleaning solvents to seat belt pretensioner units, component failure could result.



S003082

Warning: Store the airbag module with the deployment side uppermost. If it is stored deployment side down, accidental deployment will propel the airbag module with enough force to cause serious injury.

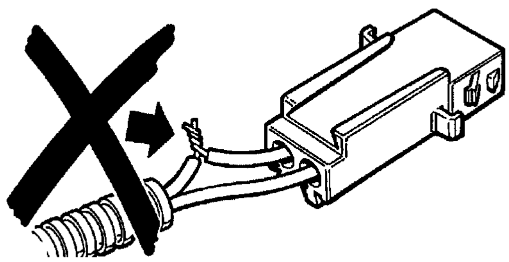
Warning: Airbag modules and seat belt pre-tensioners are classed as explosive devices. For overnight and longer term storage, they must be stored in a secure steel cabinet which has been approved as suitable for the purpose and has been registered by the local authority.

Warning: When removing of transporting the seat belt pretensioner, DO NOT aim the piston pipe at yourself or others. Keep the pistons facing the ground. Hold the case instead of the seat belt.

Warning: Store the airbag module or seat belt pre-tensioners in a designated storage area.

Caution: Improper handling or storage can internally damage the airbag module, making it inoperative. If you suspect the airbag module has been damaged, install a new module and refer to theDeployment/Disposal Procedures for disposal of the damaged module.

SRS Harnesses and Connectors



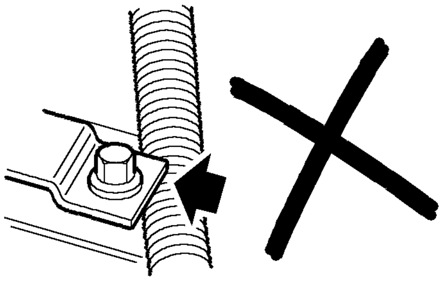
S003005

Always observe the following precautions **SRS** with regards to SRS system electrical wiring:

- Never attempt to modify, splice or repair **SRS** wiring.

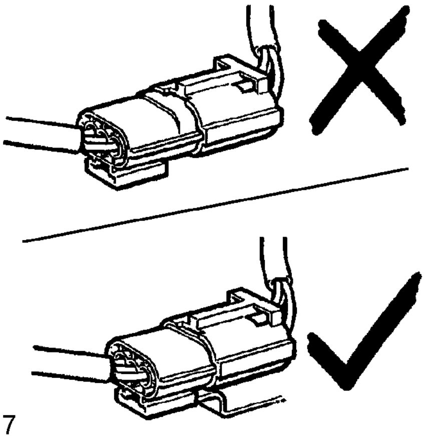
- Never install electronic equipment (such as a mobile telephone, two-way radio or in-car entertainment system) in such a way that it could generate electrical interference in the airbag harness. Seek specialist advice when installing such equipment.

Note: SRS system wiring can be identified by a special yellow outer sleeve protecting the wires (black with yellow stripe protective coverings are sometimes used).



S003006

Warning: Always ensure SRS wiring is routed correctly. Be careful to avoidtrapping or pinching the SRS wiring. Do not leave the connectors hanging loose or allow SRS components to hang from their harnesses. Look for possible points of chafing.



S003007

Precautions for Vehicle Owners

For the airbag to work effectively and protect vehicle owners, follow the precautions listed below.

Driver and passengers must use seat belts correctly. Correctly using the seat belts can protect the body and reduce injuries in the event of an accident.

Never fit any accessory that obstructs or impairs the operation of the seat belt pretensioners or airbags.

Do not place any object on the steering wheel or instrument panel that could penetrate an inflating airbag or be a thrown item likely to cause injury.

Never fit cover on seat which fitting side airbag.

Children under 12 years old should not sit in the front seat.

Only genuine accessory parts are allowed to be installed.

Only authorised people can remove airbag modules, **SRS ECU** and **SRS** system wiring harness and connectors.

If the airbag and seat belt pre-tensioner are deployed during an accident, **SRS ECU** must be replaced and discarded.

Every **SRS** system on every car has been paired and identified, **SRS** illegally adding or modifying the SRS system and the wiring harness could injure people.

Modifying the vehicle structure or SRS system is strictly not allowed **SRS** and may cause wrong airbag deployment or failure to deploy when required.

Rotary Coupler Precautions

Caution: Always follow the procedure for fitting and checking the rotary coupler as instructed in the SRS repairs section. Comply with all safety and installation procedures to ensure the system functions correctly.

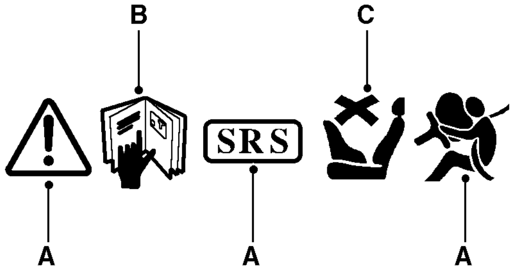
Observe the following precautions:

- Do not unlock and rotate the rotary coupler when it is removed from the vehicle.
- Do not turn the road wheels when the rotary coupler is removed from the vehicle.
- Always ensure the rotary coupler is removed and installed in its centred position and with the front road wheels in the straight ahead position - procedure. **SRS** refer to the SRS repair section for the correct removal and installation
- If a new rotary coupler is being installed, ensure the locking tab holding the coupler's rotational position is not broken; units with a broken locking tab should not be used.

Warning Labels

Warning symbols are displayed at various positions in the vehicle. **SRS** components have additional warning labels displayed on them to indicate that particular care is needed when handling them. These include airbag modules, **SRS ECU**, seat belt pre-tensioners and the rotary coupler.

The following warning symbols may be displayed at various locations on the vehicle:



S003008

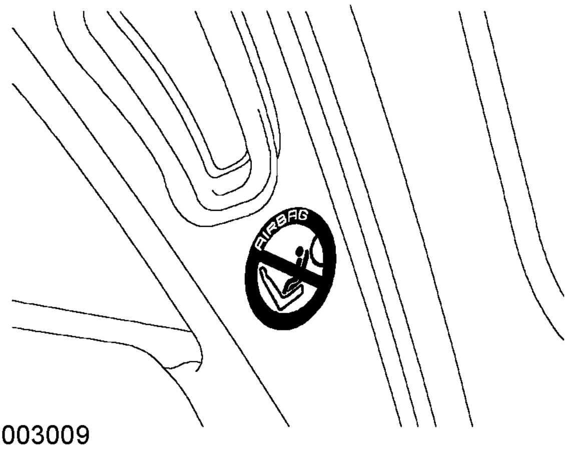
A The need for caution when working in close proximity to SRS components. **SRS** in close proximity to SRS components.

B Refer to the publication where the procedures, **SRS** instructions and advice can be found (usually Workshop Manual or Owner's Handbook) for working on the SRS system.

C Do not use rear facing child seats in the front passenger seat if the vehicle is fitted with a passenger airbag.

Warning: It is imperative that before any work is undertaken on the SRS system the appropriate information is read thoroughly.

The following list indicates possible locations and content for warning labels. Exact positions and content may vary dependent on model year, legislation and market trends.

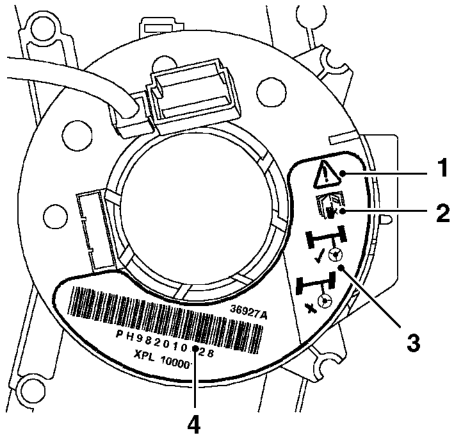


S003009

Do not use rear facing child seat in front passenger seat of vehicles fitted with passenger airbag.

Rotary Coupler

1. The need for caution when working **SRS** in close proximity to SRS components.
2. Refer to Workshop Manual for detailed instructions.
3. Ensure the wheels are in the straight ahead position before removal and refitting.
4. Bar code. The code number must be recorded if the rotary coupler is to be replaced.



S003011

Bar Codes

Bar codes **SRS** are fitted to SRS system components and components **SRS** which are critically related to SRS operation. The code number(s) must be recorded if the component is to be replaced.

Components featuring bar codes include the following:

- Driver's front airbag module – label attached to rear of module housing.
- Passenger's front airbag module – label attached at side of module housing.
- **SRS ECU** – Included the label on top of **SRS ECU**.
- Rotary coupler – several labels on front face.

Vehicle Recovery

Towing SRS Components Not Deployed

Normal towing procedures are unlikely to cause an airbag to deploy. However, as a precaution, remove the handset from the vehicle and then disconnect both battery leads. Disconnect the negative '-' lead first.

Towing SRS Components Not Deployed

Once the driver's airbag has been deployed, the vehicle must have a suspended tow. However, as a precaution remove the handset from the vehicle and then disconnect both battery leads. Disconnect the negative '-' lead first.

SRS Components Deployed

If a vehicle is to be scrapped and contains an undeployed airbag module, the module must be manually deployed.

Always observe the following precautions:

Warning: Only personnel who have undergone the appropriate training should undertake deployment of airbag and seat belt pre-tensioner modules.

Warning: A deployed airbag or seat belt pre-tensioner is very hot, DO NOT return to a deployed airbag module until at least 30 minutes have elapsed since deployment.

Warning: Only use approved deployment equipment, and only deploy SRS components in a well-ventilated designated area. Ensure SRS components are not damaged or ruptured before deployment.

Warning: Contact with chemicals from deployed and damaged SRS components could present a health hazard, wear protective clothing when handling. DO NOT eat, drink or smoke when handling SRS components.

Warning: Deployment of airbag modules and seat belt pre-tensioners can cause injury to personnel in the close vicinity of the deploying unit. In case of injury seek urgent medical advice. Possible sources of injury include:

- *impact - due to inflating airbag or pretensioner operation causing component 'kick'.*
- *hearing - due to noise produced by deploying airbags and seat belt pretensioner units.*
- *burns - hot component parts and gases.*
- *irritation to eyes and lungs - from deploying gases or combustion residue.*

Warning: Ensure the SRS component to be deployed is securely fastened to its mounting.

Warning: Compliance with the following precautions MUST be ensured:

- *Only use deployment equipment approved for the intended purpose.*
- *Before commencing any deployment procedure, ensure the deployment tool functions properly.*
- *Deployment of any airbag/pre-tensioner modules should be performed in a well ventilated area which has been designated for the purpose.*
- *Ensure the airbag/pre-tensioner modules are not damaged or ruptured before attempting to deploy*
- *Notify the relevant authorities of intention to deploy airbag and pretensioner units.*
- *When deploying any airbag and seat belt pre-tensioner units, ensure that all personnel are at least 15 metres away from the deployment zone.*
- *When deploying seat belt pretensioners in the vehicle, ensure the pre-tensioner unit is fully secured to its fixing point.*
- *When removing deployed airbag and seat belt pre-tensioner modules, wear protective clothing. Use gloves and seal deployed units in a plastic bag.*
- *Following deployment of any component of the SRS system within the vehicle, all SRS components must be replaced. DO NOT re-use or salvage any parts of the SRS system.*
- *Do not lean over airbag modules or seat belt pre-tensioner units when connecting deployment equipment.*

SRS Component Replacement Strategy

Impacts Which Do Not Deploy the Airbags or Pre-tensioners

Check for structural damage in the area of the impact, paying particular attention to bumper armatures, longitudinals, crash cans and bracketry.

Impacts Which Deploy the Airbags or Pre-tensioners

The replacement and inspection policy is dependent on the type and severity of the crash condition. **SRS**. The following guidelines are the minimum that should be exercised as a result of the deployment of specific SRS components:

Front Airbag Deployment (driver and passenger)

If the front airbags are deployed, the following parts must be replaced:

- Driver airbag module
- Passenger airbag module
- Flyleads (where applicable) connecting **SRS** front airbag modules to SRS harness
- Seat belt pre-tensioners
- Driver's seat belt retractor
- Rotary coupler
- **SRS ECU**

In addition, the following should be inspected for damage and replaced as necessary:

- Front passenger's seat belt retractor (webbing, tongue latching, ‘D' loop, body anchorage point)
- Rear seat belt buckles (webbing, buckle covers, body anchorage and tongue latching function)
- Fascia moulding adjacent to passenger airbag module
- Steering wheel (if damage is evident)
- Front seat frames and head restraints (if there is evidence of damage to the seat frame or cushion pan)
- Steering column (if adjustment is lost or there are signs of collapse)
- Seat belt automatic height adjusters on ‘B' posts
- Rear seat belt escutcheons in parcel shelf trim

Side (Thorax) Airbags

If the side (thorax) airbags are deployed, the following parts must be replaced, on the side of the vehicle on which the deployment occurred:

- Seat (thorax) airbag module
- Seat squab foam
- Seat squab cover
- Front seat belt buckle pre-tensioners
- **SRS ECU**
- Side impact crash sensors (both sides of vehicle)

In addition, the following should be inspected for damage and replaced as necessary:

- Front seat belts (retractors, webbing, tongue latching, ‘D' loop and body anchorage points)
- Rear seat belt buckles (webbing, buckle covers, tongue latching and body anchorage)
- Front seat frame (if there is evidence of external or airbag deployment damage to seat frame)
- ‘B' post internal finishers and fixings
- Door casings
- Seat belt automatic height adjusters on ‘B' post
- Rear seat belt escutcheons in parcel shelf trim

Inflatable Curtain Structure (ICS) Airbags Modules

If the Inflatable Curtain Structure airbag modules are deployed, the following parts must be replaced, (**ICS**) on the side of the vehicle for which deployment occurred:

- **ICS** airbag module
- Link lead between airbag gas generator **SRS** and SRS harness
- Airbag retaining clips above window aperture
- ‘A' post internal finisher
- Front seat belt pre-tensioners
- **SRS ECU**
- Side impact crash sensors (both sides of vehicle)

In addition, the following should be inspected for damage and replaced as necessary:

- Headlining
- **ICS** mounting brackets
- Alarm sensor
- Front seat belts (retractors, webbing, tongue latching, ‘D' loop and body anchorage points)
- Rear seat belt buckles (webbing, buckle covers, tongue latching and body anchorage)
- ‘B' post upper finisher and fixings
- Door casing
- Seat belt automatic height adjusters on ‘B' post
- Rear seat belt escutcheons in parcel shelf trim

Rear Impacts

Rear impacts may cause the seat belt pretensioners to deploy. If this occurs, all pretensioner units must be replaced. In addition, the following components should be inspected for damage and replaced as necessary:

- Front seat frames
- Seat belt automatic height adjusters on ‘B'- post
- Front seat belts (retractors, webbing, tongue latching, ‘D' loop and body anchorage points)
- Rear seat belt buckles (webbing, buckle covers, tongue latching and body anchorage)
- Rear seat belt escutcheons in parcel shelf trim
- **SRS ECU**

Periodic Replacement of SRS Components

The performance of the propellants within airbags and pre-tensioners will deteriorate over a period of time. As a result, it is essential that the airbags and pre-tensioners are periodically replaced to maintain occupant safety. Airbags, seat belt pre-tensioners and the rotary coupler should be replaced at 10 year intervals.

Air Conditioning System Precautions

Overview

The fluid and components of the air conditioning system could be potentially hazardous to the service technician or the environment if they are not serviced or handled correctly. The following guidelines are intended to alert the service engineer to potential dangers and emphasize the importance of ensuring the integrity of the air conditioning operating conditions and components fitted to the vehicle.

Where necessary, additional specific precautions are detailed in the relevant sections herein which should be referred to prior to any repair.

Warning: Servicing must only be carried out by personnel familiar with both the vehicle system, the charging and testing equipment and hold the correct training certificates (as recommended by government bodies). All operations must be carried out in a well ventilated area away from open flame and heat sources.

Warning: Air conditioning refrigerant is a hazardous liquid and when handled incorrectly can cause serious injury. Suitable protective clothing, consisting of face protection, heat proof gloves, rubber boots and rubber apron or waterproof overalls, must be worn when carrying out operations on the air conditioning system.

First-aid Measures

If an accident involving air conditioning refrigerant occurs, conduct the following first-aid measures:

- If air conditioning refrigerant liquid enters into the eye, do not rub it. Gently run large quantities of eye wash over affected eye to raise the temperature. If an eye wash is not available, cool clean water may be used to flush the eye. After rinsing, cover the eye with a clean pad and seek immediate medical care.
- If the air conditioning refrigerant liquid is splashed onto the skin, rinse with large quantity of water to raise the temperature. Take the same measures for skin contact with the discharge. Wrap the contaminated skin in blankets (or equivalents) and seek immediate medical care.
- If inhalation of the air conditioning refrigerant vapour cause persons to be unconscious, move them away from the contaminated area to fresh air and apply artificial respiration and/or oxygen and seek immediate medical care.

Warning: Due to its low evaporating temperature, Air conditioning refrigerant must be handled with care. Air conditioning refrigerant splashed on any part of the body will cause immediate freezing of that area. Also, refrigerant cylinders and replenishment trolleys when discharging will freeze skin to them if contact is made.

Service Precautions

Observe the following precautions when handling components used in the air conditioning system:

- Air conditioning units must not be lifted by their hoses, pipes or capillary lines.
- Hoses and lines must not be subjected to any twist or stress; the efficiency of the system will be impaired by kinks or restrictions. Ensure that hoses are correctly positioned and all clips and supports are utilized before tightening couplings.
- Flexible pipes shall not be close to the hot component (at least 100 mm) unless a heat shield is used.
- Completed assemblies must be checked for the A/C pipe touching the metal panels. Noise due to any direct contact between the A/C component and the panels shall be avoided.
- When tightening the connections of the A/C pipe, tighten it to the specified torque with an appropriate torque wrench. When tightening, an additional wrench must be used to hold the support to prevent pipe from deformation.
- Before connecting any hose or tube, ensure that A/C oil is applied to the seat of the new O-ring, BUT NOT to the thread.
- All fittings of the A/C refrigeration system must be stored under seal and shall be connected immediately after removal of the sealing component.
- Ensure components are at room temperature before uncapping, to prevent moisture in the air from entering into the A/C.
- Component seal must not remain uncapped for more than 15 minutes. In the event of a delay, the sealing component must be fitted.
- When disconnecting the A/C pipe, immediately cap the A/C pipe interface and prevent ingress of dirt and moisture into the system.
- Desiccant in the receiver/drier absorbs moisture. It must be positively sealed at all times. A receiver/drier that has been left uncapped must not be used, fit a new unit.
- The receiver/drier should be the last component connected to the system to ensure optimum dehydration and maximum moisture protection of the system.
- Whenever the refrigeration system is opened, the desiccant must be renewed immediately before refilling the refrigerant.
- Use alcohol and a clean lint-free cloth to clean dirty connections.
- Ensure that all new parts fitted are marked for use with air conditioning refrigerant.

A/C Oil

The A/C oil easily absorbs water and must not be stored for long periods. Do not pour unused refrigerant oil back into the container. Always use an approved A/C oil.

When replacing components of the A/C system, drain the A/C oil from the component into a graduated container. On assembly, add the new component with the same quantity of A/C oil when draining.

Compressor

A new compressor is sealed and pressurized with nitrogen gas. When fitting a new compressor, slowly release the sealing cap; air leak noise can be heard when the seal is in poor condition.

Caution: Do not remove the cap(s) until immediately prior to connecting the air conditioning pipes to the compressor.

Rapid Refrigerant Discharge

If the air conditioning system is damaged in an accident, the refrigerant will leak rapidly. Rapid discharge of the refrigerant will also take away most of the A/C oil from the system. While removing the compressor, drain the remaining A/C oil, and maintain as per the instructions described in the air conditioning section hereinl.

Precautions for Refrigerant Recovery, Refill and Recycling

When refilling A/C refrigerant, drain and recover the refrigerant in the original system, then refill the refrigerant and A/C oil required.

Warning: Refrigerant must always be recycled before re-use to ensure that the purity of the refrigerant is high enough for safe use in the air conditioning system.

Warning: Recycling should always be carried out with equipment which is design certified by Underwriter Laboratory Inc. for compliance with SAE J1991. Other equipment may not recycle refrigerant to the required level of purity.

Warning: Refrigerant Recovery Recycling Recharging Station must not be used with any other type of refrigerant.

Warning: Refrigerant from domestic and commercial sources must not be used in motor vehicle air conditioning systems.

Caution: The system must be evacuated immediately before recharging commences. Delay between evacuation and recharging is not permitted.

Air Conditioning Compressor Replacement

Replacement Instructions

A new compressor is supplied filled with a full charge of refrigerant oil. The new compressor must be drained and a calculated quantity of oil added before fitting. To calculate the quantity of oil to be added, carry out the following procedure:

1. Remove the filler/drain plug from the old compressor.
2. Invert the compressor and gravity drain the oil into a calibrated measuring cylinder. Rotate the compressor clutch to ensure the compressor is completely drained.
3. Record the quantity of oil drained, discard the oil.
4. Remove the filler/drain plug from the new compressor.
5. Invert the compressor and gravity drain the oil into a calibrated measuring cylinder. Rotate the compressor clutch to ensure the compressor is completely drained.
6. Add the same amount of oil drained from the old compressor to the new compressor.
7. Discard the remaining oil drained from the new compressor.
8. Fit and tighten the compressor filler/drain plug.

Lifting & Towing

Lifting Vehicle

Description

Before lifting the vehicle, note the followings:

- The vehicle shall be parked on a level and firm ground.
- Press the electronic parking brake system switch.
- Select P or N gear.

To avoid damage to the underbody parts, please follow the procedures below:

Do not put the jack or axle bracket under the following components:

- Body Structural Parts
- Bumper
- Brake Line
- Front Suspension Arm
- Steering Connecting Mechanism
- Rear Suspension Arm
- High-voltage Battery Module
- High-voltage Drive Motor
- Transmission Housing
- Rear Towing Eye

Lifting and Supporting the Vehicle

Front/Rear Supporting Point of the Vehicle

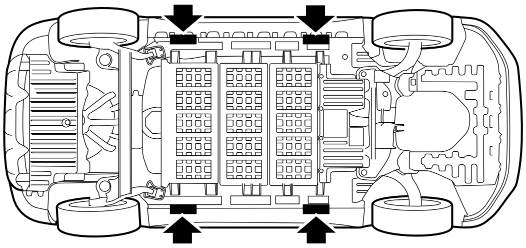
Put the head of the jack at the lifting point of the front/rear door sill of the vehicle.

Caution: Do not jack or support the vehicle on any points other than those indicated. Failure to comply is likely to result in damage to the body or chassis components.

Warning: Always chock the wheels when jacking.

Warning: Do not work on or under a vehicle supported only by a jack.Always support the vehicle on safety stands.

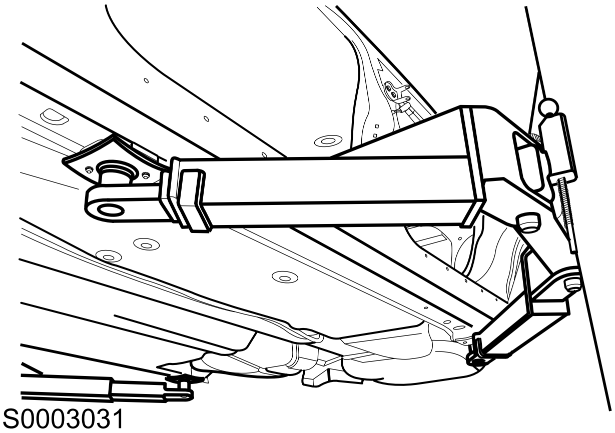
Warning: Do not commence work on the underside of the vehicle until suitable safety supports have been positioned under the sill reinforced brackets.



Hydraulic Jack

The hydraulic jack to be used must have a bearing capacity of at least 1,500kg (3,300lbs).

Column Lifter



S0003031

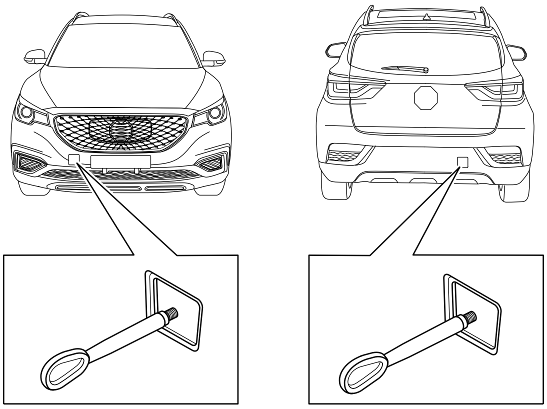
Put the mat of the lifting arm of the lifter under the jacking point on the sill.

Roadside Assistance

Towing Vehicle

Towing Eye

Warning: DO not use a tow rope that is twisted - or the towing hook may be unscrewed.



The vehicle has a towing hole at the front and rear respectively for fitting the towing eyes in the toolbox, and the toolbox is placed under the trunk floor. Before fitting the towing eye, remove the small cover on the bumper first, then screw the towing eye through the hole into the threaded hole in the bumper beam. Ensure the towing eye is fully tightened!

When your vehicle breaks down or has an accident, the towing eyes can be used as towing points for towing. But they are not designed for towing other vehicles. A soft rope can be used for towing, however it is recommended to use a hard rod to tow the vehicle.

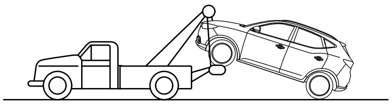
Towing

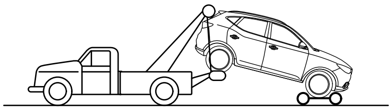
Warning: If, due to an electrical fault, potential safety hazards may exist, it is not allowed to put the START/STOP Switch in 'ON' position.

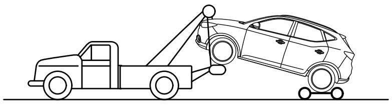
Warning: DO not suddenly start the towing car with great acceleration or accelerate to avoid damaging the car.

Suspension Towing

If your vehicle needs to be towed, the best way of towing is suspension towing. The drive wheel shall be off the ground in the suspension towing, or the transmission may be damaged. The parking brake shall be released, the hazard warning lamp shall be turned on, and passengers shall not stay in the vehicle being towed.

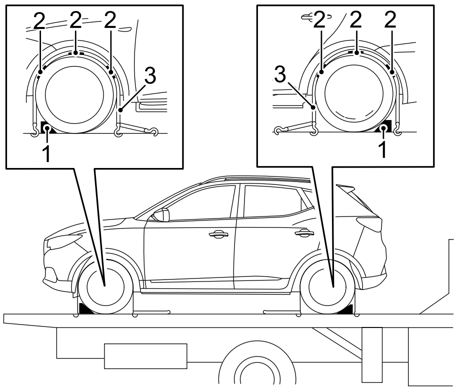






Vehicle Shipping

If the vehicle needs to be shipped, a special transporter is recommended. Fix the vehicle on the transporter as follows:



- Before the vehicle is shipped, ensure that the electronic parking brake system (EPB) is enabled.
- Place the wheel chocks (1) as shown in the figure, and place the anti-slip rubber pads (2) around the wheels.
- Fit the lashing strap (3) around the wheel and secure it to the towing vehicle. Tighten the strap to secure the vehicle.

Vehicle Identification Number

Vehicle Identification Number

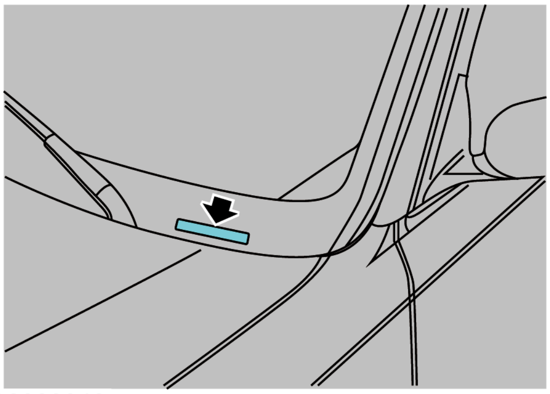
Vehicle Identification Number (VIN)

Example：LSJW74U96MZXXXXXX

Figures	Code	Description
1–3	LSJ	Manufacturer's Identifier, LSJ = Saic Motor
4–5	W7	Vehicle Type, W7 = ZS1
6	4	Vehicle Body Structure, 4 = 2–compartment & 5–door
7	C,U	Engine C = 1.3T/1.0T Gasoline Engine U = 1.5L Gasoline Engine
8	9	Occupant Restraint System 9 = Safety belt, driver and front-seat passenger airbag & seat-side airbag , and front & rear curtain airbag
9	6	Check bit (represented by any figure from 0 to 9 or letter X)
10	M	Year of Manufacturing M = 2021
11	Z	Plant, G = zhenzhou, henan
12–17	6 figures	Serial number

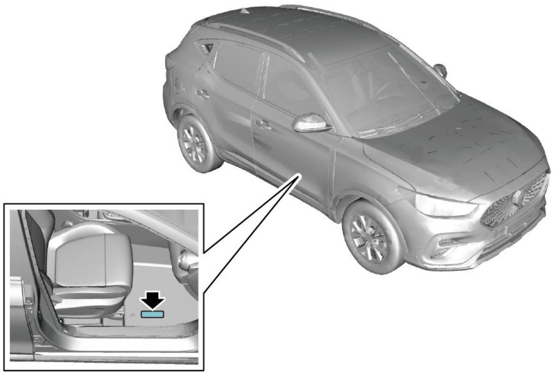
VINThe VIN is also stamped in the following location:

On a plate behind the LH lower corner of the windshield.



S0000043

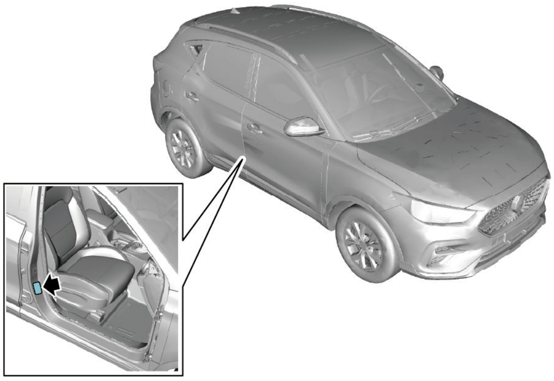
Printed on the front floor of the right front seat.



S0000002

Location of Vehicle Identification Plate

The identification plate is located at the lower side of the right B pillar. For details, please refer to the specific vehicle identification plate.

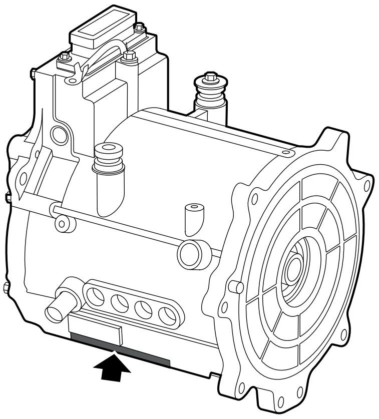


S0000001

Position of Other Signs

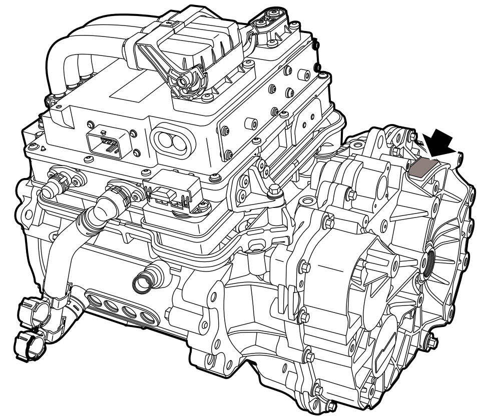
Drive motor number

Printed on the lower part of the drive motor housing, as shown in the figure.



Electric Drive transmission

Printed on the upper rear part of the electric drive system housing, as shown in the figure.



Lubrication & Maintenance

Capacity

Liquid Capacity

The following capacity values are merely approximate value for the corresponding system.

Component/System	Capacity
Electric drive transmission oil: Refill	 0.9L
Cooling System - Motor coolant: Refill Cooling System - Battery coolant: Refill	 4.8L 5.6L
Brake fluid for brake system	0.75L
Windshield washer reservoir	4.0L

Fluid

Coolant

Please be sure to use the coolant recommended and approved by SAIC Motor. Glycol (OAT) coolant is recommended.

In emergency, a small amount of clean water may be filled in the coolant reservoir. However, it should be noted that this will weaken the freeze and corrosion protection function and reduce the service life of the coolant. DO NOT refill the cooling system with anti-freeze of different formulations.

Adding additives that are not suitable for the vehicle to the coolant may damage the parts that need to be cooled. It is recommended to use additives approved by SAIC Motor.

Brake Fluid

Use brake fluid DOT 4 only.

Lubricating Fluids

Electric drive transmission Fluid

Failure to use the specified transmission fluid may result in serious damage to the transmission.

Electric drive transmission

Refill with Shell E-Fluids E6 iX (SL2808) oil.

General Lubricating Grease

Use FN745/94 lubricating grease produced by.

Lock, Lock Body and Hinge

Do not apply any lubricating grease on the fixing end of the torsion bar spring, however, Isoflex Topas L32CN lubricating grease is recommended for its rotating end.

Washer Fluid

Use ZY-VIII washer fluid.

Cooling System

Specifications

Torque

Description	Value
Bolt-EDS coolant Expansion tank to body	4-6Nm
Bolt-Battery coolant Expansion tank to body	4-6Nm
Nut-Battery cooler pipe to body	4-6Nm
Bolts-Battery cooler to battery cooler bracket	7-10Nm
Nut-Air conditioning line to battery cooler TXV	7-10Nm
Nut-Battery cooler TXV to Battery cooler	7-10Nm
Bolt-Relay to front bracket	5–7Nm

Service Procedures-EDS

Coolant - Drain and Refill

Drain

1. Disconnect the negative battery cable.
2. Remove the manual service disconnect.

☞**Manual Service Disconnect Remove**

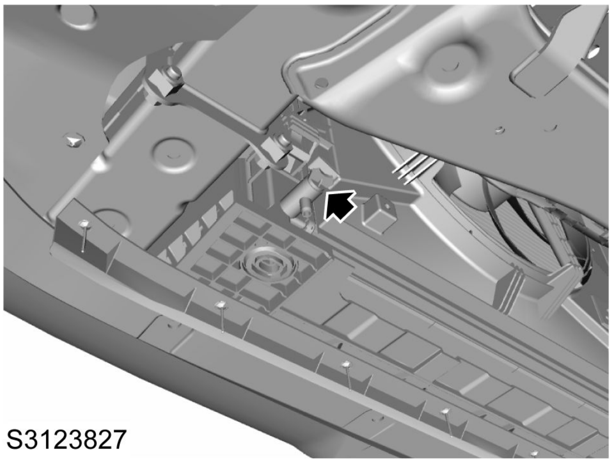
3. Cover the expansion tank cap with a wet cloth, and unscrew the cap.

Warning: Since injury such as scalding could be caused by escaping steam or coolant, do not remove the filler cap from the coolant expansion tank while the system is hot.

4. Remove the front bottom deflector.

☞**Bottom Deflector Remove**

5. Position a suitable container to collect the coolant.
6. Unscrew the drain valve, and use a draining method to drain the coolant.



S3123827

Refill

1. Close the coolant drain valve.
2. Prepare the coolant of specified concentration.

☞**Fluid**

3. Refill the cooling system, until the coolant level reaches between MIN and MAX marks on the expansion tank and keeps still.
4. Fit the manual service disconnect.

☞**Manual Service Disconnect Refit**

5. Connect the negative battery cable.
6. It is required to rotate the water pump to bleed the air in the cooling system. See below for specific steps:
7. Connect the scan tool.
8. Operate the electric drive system coolant refill/bleeding: VDS - Fast Channel - Others - Electric Drive System Coolant Refill/bleeding.
9. Observe the flow of coolant in the tank (coolant flow indicates that the pump is not idling).
10. Keep the coolant flowing for 20 to 30 minutes. You can add coolant when the coolant level in the expansion tank is low during this process.
11. When the coolant level in the expansion tank does not change, disconnect the scan tool.
12. Check whether the coolant level is between MIN and MAX. If not, top up the tank with coolant or drain it to be between MIN and MAX as required.
13. Close the expansion tank cap.
14. Fit the bottom deflector.

☞**Bottom Deflector Refit**

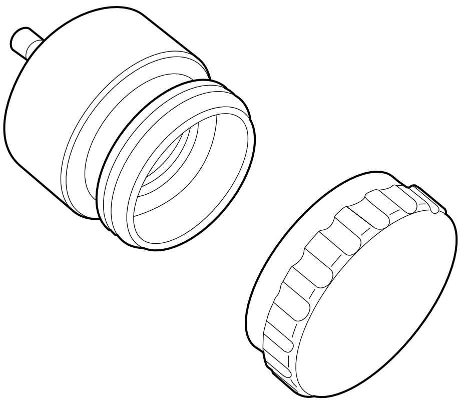
Expansion Tank Cap - Pressure Test

Check

1. Visually check the expansion tank cap for signs of leakage.
2. Check the hose for any rupture and distortion trace, and the tightness of the pipeline connection.
3. Open the coolant expansion tank cap.

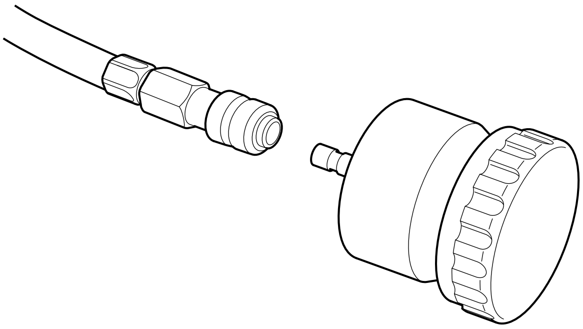
Warning: Since injury such as scalding could be caused by escaping steam or coolant, do not remove the filler cap from the coolant expansion tank while the system is hot.

4. Fit the TEN00010 on the expansion tank cap.



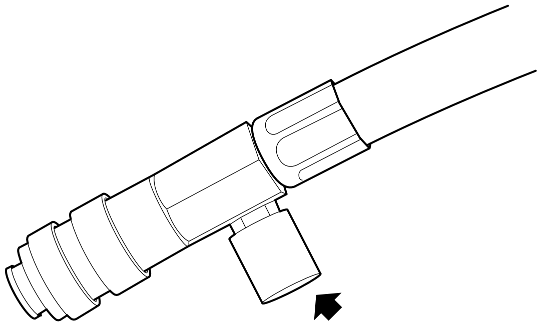
S143049

5. Connect the T14001 pressure hose to the TEN00010.



S143047

6. Pressurize the expansion tank cap slowly to the specified pressure, then check the pressure; if the pressure range is maintained within 140-160KPa, the expansion tank cap is normal.
7. Relieve the pressure through the relief valve on the pressurizer.



S143048

8. Remove the T14001 pressure hose from the TEN00010.
9. Remove the expansion tank cap from the TEN00010 and replace it on the expansion tank.

System Pressure Test

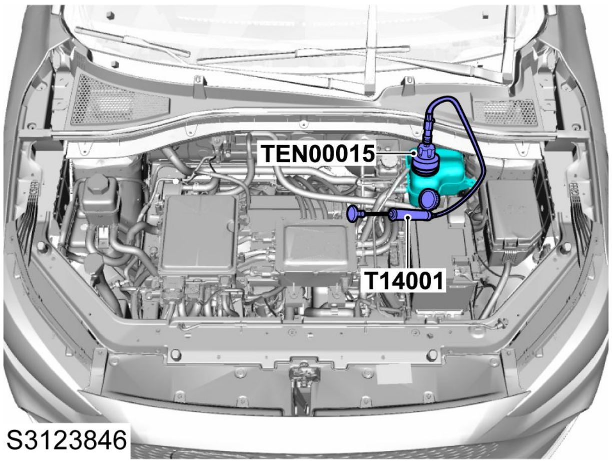
Check

1. Check the hose for any rupture and distortion trace, and the tightness of the pipeline connection.
2. Open the coolant expansion tank cap.

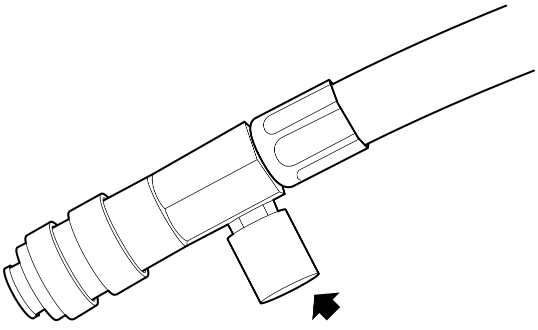
Warning: Since injury such as scalding could be caused by escaping steam or coolant, do not remove the filler cap from the coolant expansion tank while the system is hot.

3. Fit the TEN00015 on the expansion tank.
4. Connect the T14001 pressure hose to the TEN00015.
5. Pressurize the system slowly to 140-160KP and check for leakage.

Warning: Do not exceed the setting pressure value, or the cooling system will be damaged.



6. Visually check the electric drive unit and the cooling system for signs of coolant leakage.
7. Relieve the pressure through the relief valve on the T14001.



8. Disconnect the T14001 hose from the TEN00015.
9. Remove the TEN00015 from the expansion tank and fit the expansion tank cap.

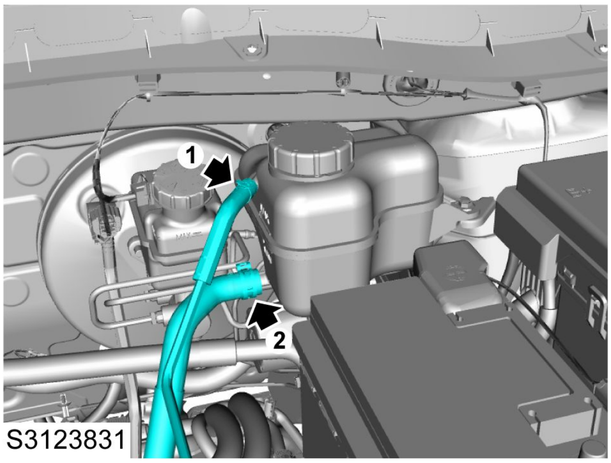
Coolant Expansion Tank - PEB

Remove

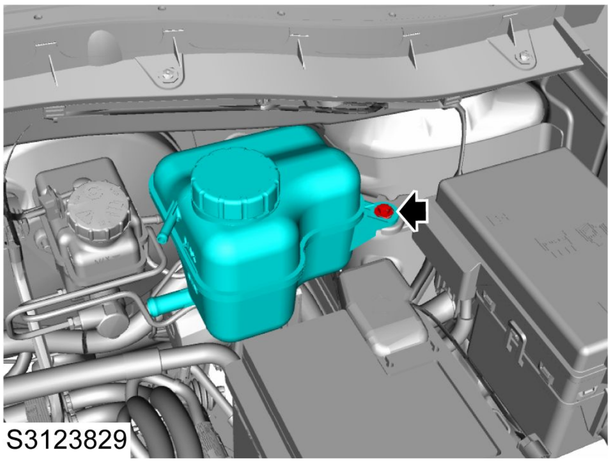
1. Drain the coolant.

☞**Coolant - Drain**

2. Loosen the clamp (1), and disconnect the overflow pipe assembly from the coolant expansion tank.
3. Loosen the clamp (2), and disconnect the hose assembly - radiator to electric water pump from the coolant expansion tank.



4. Remove 1 bolt fixing the coolant expansion tank to the body.



5. Remove the coolant expansion tank - EDS.

Refit

1. Fix the coolant expansion tank to the body; fit 1 bolt, tighten it to **4-6Nm**, and check the torque.
2. Connect the hose assembly - radiator to electric water pump to the coolant expansion tank, and secure it with clamps.
3. Connect the overflow pipe to the coolant expansion tank, and secure it with clamps.
4. Refill the coolant.

☞**Coolant - Refill**

Hose Assembly - Electric Water Pump to Charger

Remove

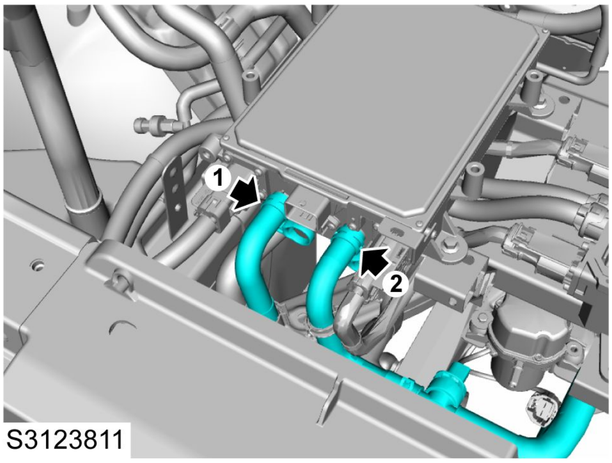
1. Disconnect the negative battery cable.
2. Remove the manual service disconnect.

☞**Manual Service Disconnect Remove**

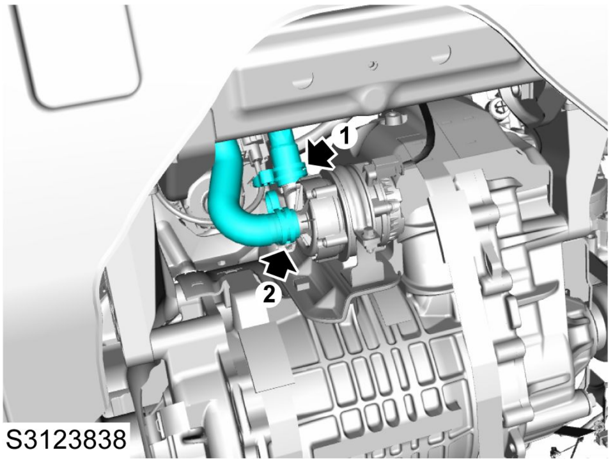
3. Drain the coolant.

☞**Coolant - Drain**

4. Loosen the clamp (1), and disconnect the hose assembly - electric water pump to charger from the charger.



5. Loosen the clamp (2), and disconnect the hose assembly - electric water pump to charger from the electric water pump.



6. Loosen the clip, and remove the hose assembly - electric water pump to charger.

Refit

1. Fit the hose assembly - electric water pump to charger, and secure it with clips.
2. Connect the hose assembly - electric water pump to charger to the electric water pump, and secure it with clamps.
3. Connect the hose assembly - electric water pump to charger to the charger, and secure it with clamps.
4. Refill the coolant.

☞**Coolant - Refill**

5. Fit the manual service disconnect.

☞**Manual Service Disconnect Refit**

6. Connect the negative battery cable.

Hose Assembly - Charger to PEB

Remove

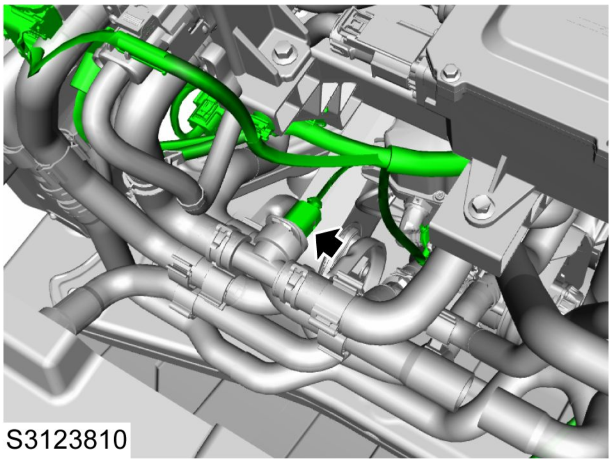
1. Disconnect the negative battery cable.
2. Remove the manual service disconnect.

☞**Manual Service Disconnect Remove**

3. Drain the coolant.

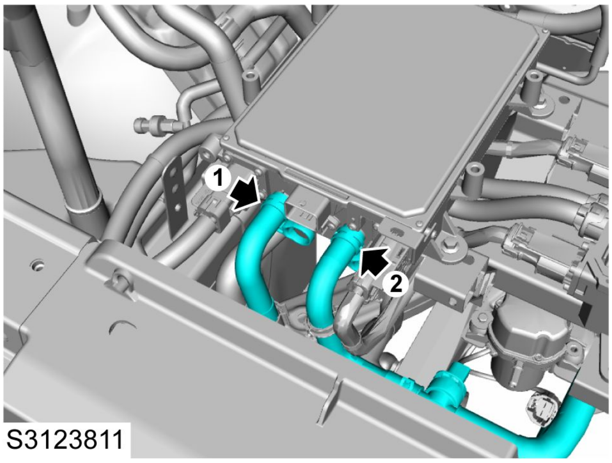
☞**Coolant - Drain**

4. Disconnect the connector of the EDS coolant sensor.



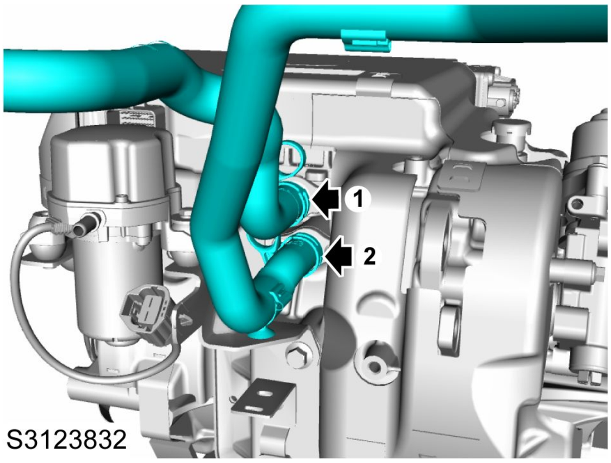
S3123810

5. Loosen the clamp (2), and disconnect the hose assembly - charger to **PEB** from the charger.



S3123811

6. Loosen the clamp (1), and disconnect the hose assembly - charger to **PEB** from the **PEB**.



S3123832

7. Loosen the clip, and remove the hose assembly - charger to **PEB**.

Refit

1. Fit the hose assembly - charger to **PEB**, and secure it with clips.
2. Connect the hose assembly - charger to **PEB** to the **PEB**, and secure it with clamps.
3. Connect the hose assembly - charger to **PEB** to the charger, and secure it with clamps.
4. Connect the connector of the EDS coolant sensor.
5. Refill the coolant.

☞**Coolant - Refill**

6. Fit the manual service disconnect.

☞**Manual Service Disconnect Refit**

7. Connect the negative battery cable.

Hose Assembly - Drive Motor to Radiator

Remove

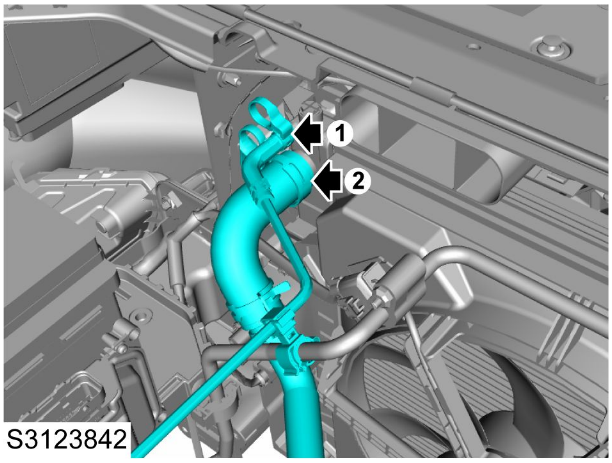
1. Disconnect the negative battery cable.
2. Remove the manual service disconnect.

☞**Manual Service Disconnect Remove**

3. Drain the coolant.

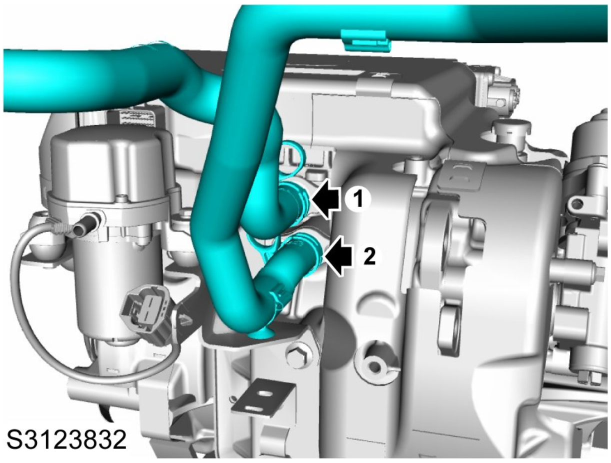
☞**Coolant - Drain**

4. Loosen the clamp (2), and disconnect the hose assembly - drive motor to radiator from the radiator.



S3123842

5. Loosen the clamp (2), and disconnect the hose assembly - drive motor to radiator from the drive motor.



S3123832

6. Loosen the clip, and remove the hose assembly - drive motor to radiator.

Refit

1. Fit the hose assembly - drive motor to radiator, and secure it with clips.
2. Connect the hose assembly - drive motor to radiator to the drive motor, and secure it with clamps.
3. Connect the hose assembly - drive motor to radiator to the radiator, and secure it with clamps.
4. Refill the coolant.

☞**Coolant - Refill**

5. Fit the manual service disconnect.

☞**Manual Service Disconnect Refit**

6. Connect the negative battery cable.

Hose Assembly - Radiator to Electric Water Pump

Remove

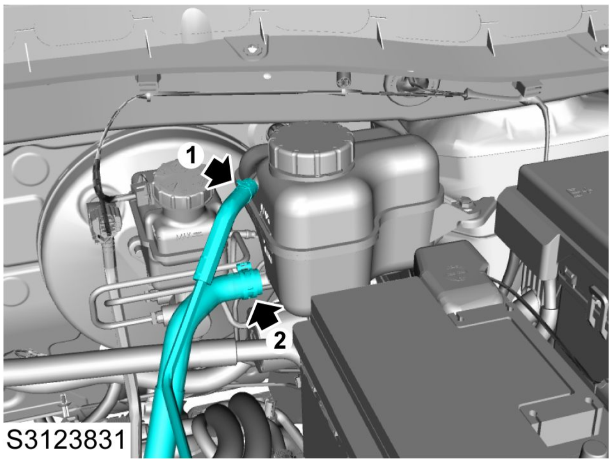
1. Disconnect the negative battery cable.
2. Remove the manual service disconnect.

☞**`Manual Service Disconnect Remove`**

3. Drain the coolant.

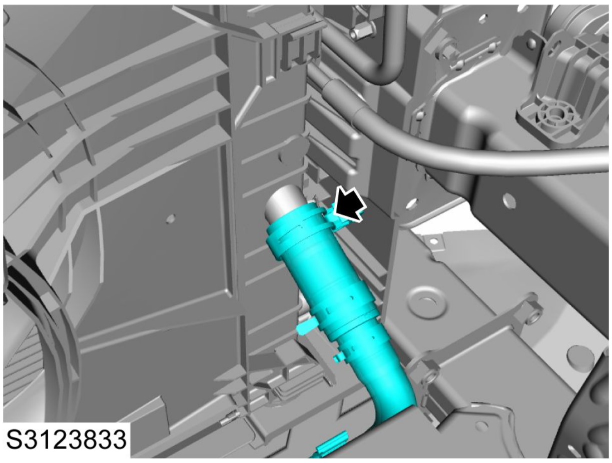
☞**`Coolant - Drain`**

4. Loosen the clamp (2), and disconnect the hose assembly - radiator to electric water pump from the expansion tank.



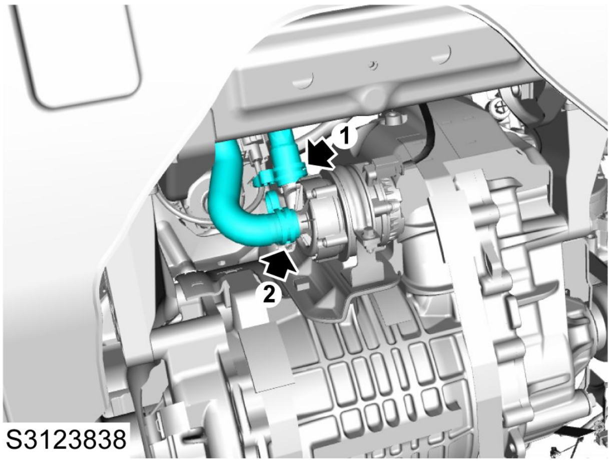
S3123831

5. Loosen the clamp, and disconnect the hose assembly - radiator to electric water pump from the radiator.



S3123833

6. Loosen the clamp (2), and disconnect the hose assembly - radiator to electric water pump from the electric water pump.



S3123838

7. Loosen the clip, and remove the hose assembly - radiator to electric water pump.

Refit

1. Fit the pipeline assembly - radiator to electric water pump, and secure it with clips.
2. Connect the hose assembly - radiator to electric water pump to the electric water pump and secure it with clamps.
3. Connect the hose assembly - radiator to electric water pump to the radiator, and secure it with clamps.
4. Connect the hose assembly - radiator to electric water pump to the expansion tank, and secure it with clamps.
5. Refill the coolant.

☞**`Coolant - Refill`**

6. Fit the manual service disconnect.

☞**`Manual Service Disconnect Refit`**

7. Connect the negative battery cable.

Overflow Pipe Assembly

Remove

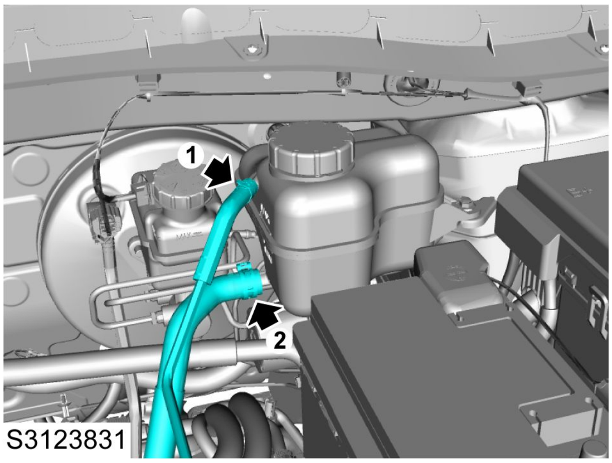
1. Disconnect the negative battery cable.
2. Remove the manual service disconnect.

☞**Manual Service Disconnect Remove**

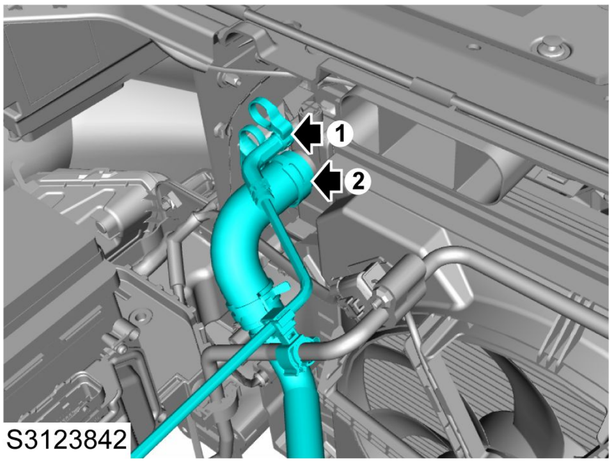
3. Drain the coolant.

☞**Coolant - Drain**

4. Loosen the clamp (1), and disconnect the overflow pipe assembly from the expansion tank.



5. Loosen the clamp (1), and disconnect the overflow pipe assembly from the radiator.



6. Loosen the clip and remove the overflow pipe assembly.

Refit

1. Fit the overflow pipe assembly and secure it with clips.
2. Connect the overflow pipe to the radiator, and secure it with clamps.
3. Connect the overflow pipe to the expansion tank, and secure it with clamps.
4. Refill the coolant.

☞**Coolant - Refill**

5. Fit the manual service disconnect.

☞**Manual Service Disconnect Refit**

6. Connect the negative battery cable.

PEB Coolant Sensor

Remove

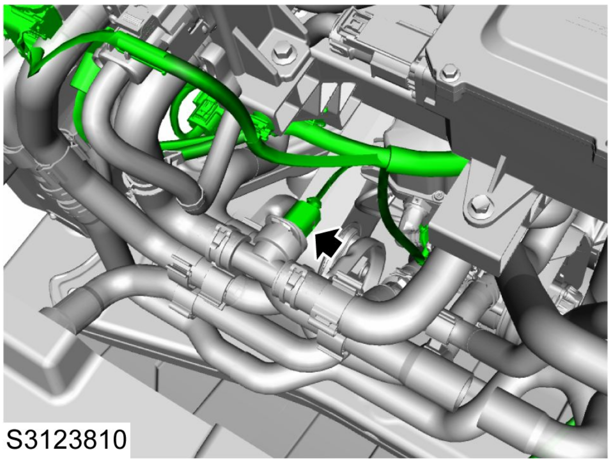
1. Disconnect the negative battery cable.
2. Remove the manual service disconnect.

☞**Manual Service Disconnect Remove**

3. Drain the coolant.

☞**Coolant - Drain**

4. Disconnect the connector of the EDS coolant sensor.



5. Loosen the circlip, and remove the EDS coolant sensor.

Refit

1. Fit the EDS coolant sensor and secure it with circlips.
2. Connect the connector of the EDS coolant sensor.
3. Refill the coolant.

☞**Coolant - Refill**

4. Fit the manual service disconnect.

☞**Manual Service Disconnect Refit**

5. Connect the negative battery cable.

PEB Water Pump

Remove

1. Disconnect the negative battery cable.
2. Remove the manual service disconnect.

☞**Manual Service Disconnect Remove**

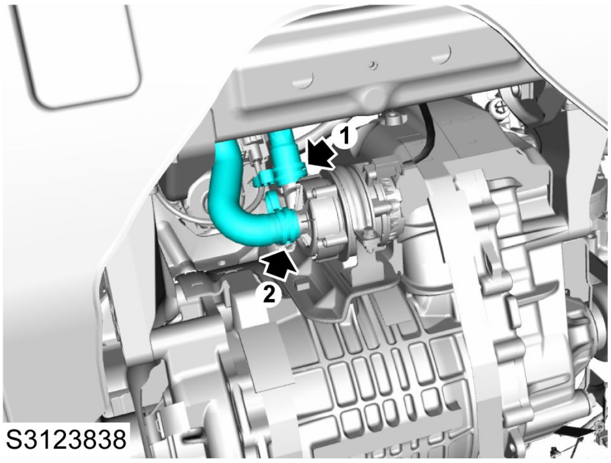
3. Drain the coolant.

☞**Coolant - Drain**

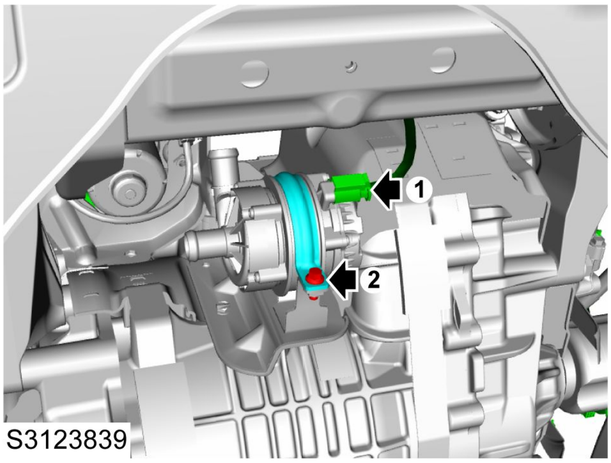
4. Remove the EDS water pump bracket A(If Fitted).

☞**EDS Water Pump Bracket A Remove(If Fitted)**

5. Loosen the clamp (2), and disconnect the hose assembly - radiator to electric water pump from the electric water pump.
6. Loosen the clamp (1), and disconnect the hose assembly - electric water pump to charger from the electric water pump.



7. Disconnect the connector (1) of the EDS water pump.
8. Remove 1 bolt fixing the electric water pump bracket - small to the electric water pump bracket - large, and remove the electric water pump bracket - small.



9. Remove the EDS water pump.

Refit

1. Connect the connector of the EDS water pump.
2. Fix the electric water pump bracket - small to the electric water pump bracket - large, fit 1 bolt, tighten it to TBD, and check the torque.
3. Connect the hose assembly - electric water pump to charger to the electric water pump, and secure it with clamps.
4. Connect the hose assembly - radiator to electric water pump to the electric water pump and secure it with clamps.
5. Fit the EDS water pump bracket A(If Fitted).

☞**EDS Water Pump Bracket A Refit(If Fitted)**

6. Refill the coolant.

☞**Coolant - Refill**

7. Fit the manual service disconnect.

☞**Manual Service Disconnect Refit**

8. Connect the negative battery cable.

Service Procedures-Battery

Coolant - Drain and Refill

Drain

1. Disconnect the negative battery cable.
2. Remove the manual service disconnect.

☞**Manual Service Disconnect Remove**

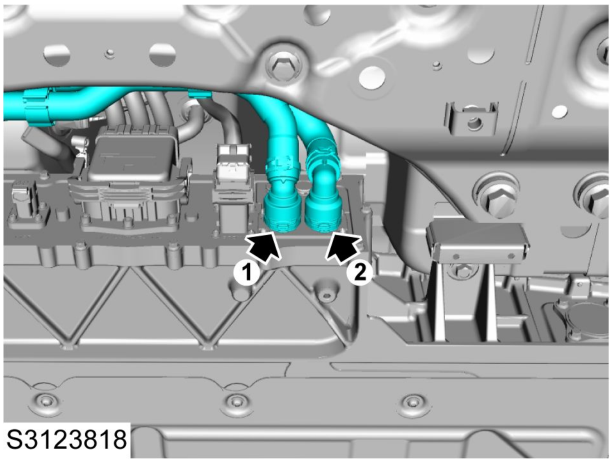
3. Remove the middle centre bottom deflector.

☞**Bottom Deflector Remove**

4. Cover the expansion tank cap with a wet cloth, and unscrew the cap.

Warning: Since injury such as scalding could be caused by escaping steam or coolant, do not remove the filler cap from the coolant expansion tank while the system is hot.

5. Position a suitable container to collect the coolant.
6. Loosen the circlip, and disconnect the traction battery-side hose assembly from the high-voltage battery pack.



7. Drain the battery coolant.

Refill

1. Connect the traction battery-side hose assembly to the high-voltage battery pack, and secure it with circlips.
2. Prepare the coolant of specified concentration.

☞**Fluid**

3. Refill the coolant, until the coolant level reaches between MIN and MAX marks on the expansion tank and keeps still.
4. Connect the negative battery cable.
5. Connect the scan tool.
6. Enter the forced output of BMS module, "High-voltage Battery Pack Coolant Pump Control", to operate the water pump.
7. If it is found that the coolant level in the expansion tank does not drop, maybe the water pump is idling. It is considered to assist the T14001 with the pressurizer, to force the coolant to flow into the water pump inlet.
8. Run the water pump for about 20–30 minutes, and check the coolant level of the battery coolant expansion tank. If required, fill the coolant to the level between MIN and MAX.
9. Fit the battery coolant expansion tank cap.
10. Check the cooling system for leakage.
11. Fit the middle centre bottom deflector.

☞**Bottom Deflector Refit**

12. Fit the manual service disconnect.

☞**Manual Service Disconnect Refit**

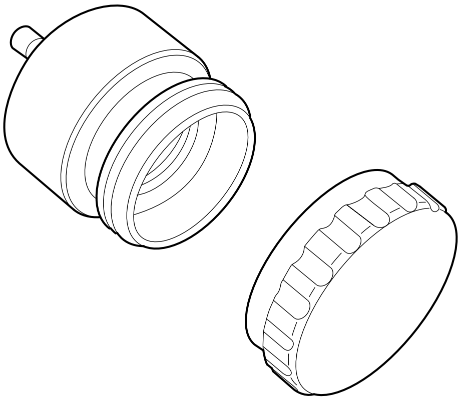
Expansion Tank Cap - Pressure Test

Check

1. Visually check the expansion tank cap for signs of leakage.
2. Check the hose for any rupture and distortion trace, and the tightness of the pipeline connection.
3. Open the coolant expansion tank cap.

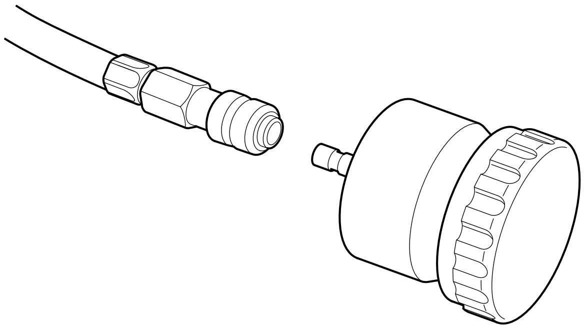
Warning: Since injury such as scalding could be caused by escaping steam or coolant, do not remove the filler cap from the coolant expansion tank while the system is hot.

4. Fit the TAC00002 on the expansion tank cap.



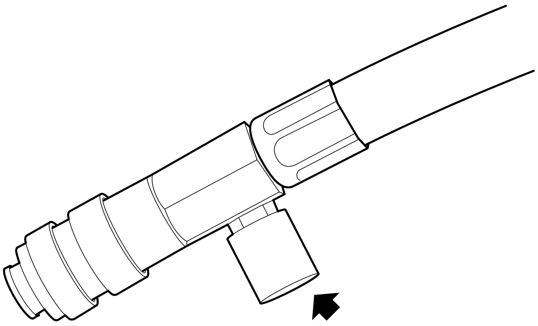
S143049

5. Connect the T14001 pressure hose to the TAC00002.



S143047

6. Pressurize the expansion tank cap slowly to the specified pressure, and check the pressure range, if the pressure can be maintained at 35KPa, the expansion tank cap is normal..
7. Relieve the pressure through the relief valve on the pressurizer.



S143048

8. Remove the T14001 pressure hose from the TAC00002.
9. Remove the expansion tank cap from the TAC00002 and replace it on the expansion tank.

System Pressure Test

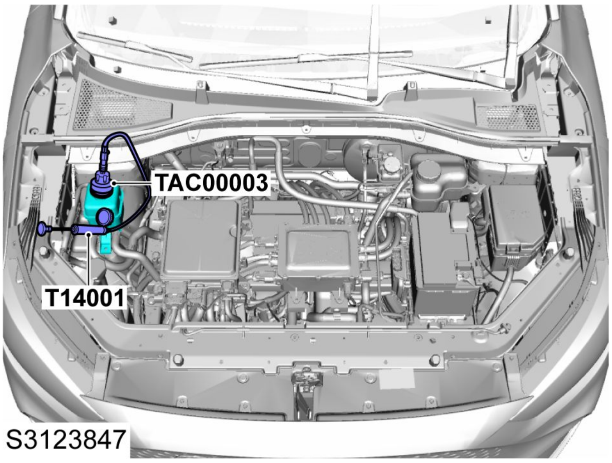
Check

1. Check the hose for any rupture and distortion trace, and the tightness of the pipeline connection.
2. Open the coolant expansion tank cap.

Warning: Since injury such as scalding could be caused by escaping steam or coolant, do not remove the filler cap from the coolant expansion tank while the system is hot.

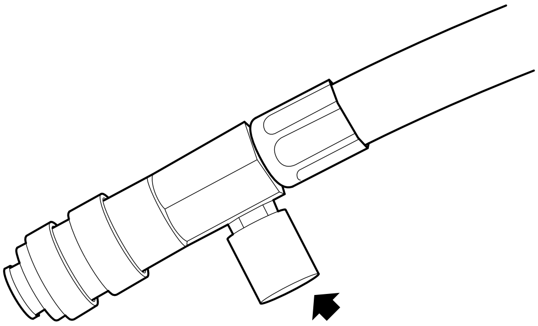
3. Fit the TAC00003 on the expansion tank.
4. Connect the T14001 pressure hose to the TAC00003.
5. Pressurize the system slowly to 35KPa and check for leakage.

Warning: Do not exceed the setting pressure value, or the cooling system will be damaged.



S3123847

6. Visually check the electric drive unit and the cooling system for signs of coolant leakage.
7. Relieve the pressure through the relief valve on the T14001.



S143048

8. Disconnect the T14001 hose from the TAC00003.
9. Remove the TAC00003 from the expansion tank and fit the expansion tank cap.

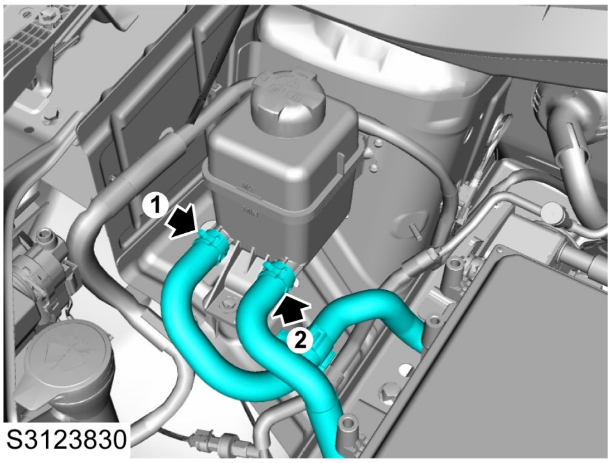
Coolant Expansion Tank - Battery

Remove

1. Drain the coolant.

☞**Coolant - Drain**

2. Loosen the clamp (1), and disconnect the hose assembly - traction battery to battery expansion tank from the coolant expansion tank.
3. Loosen the clamp (2), and disconnect the hose assembly - battery expansion tank to water pump from the coolant expansion tank.



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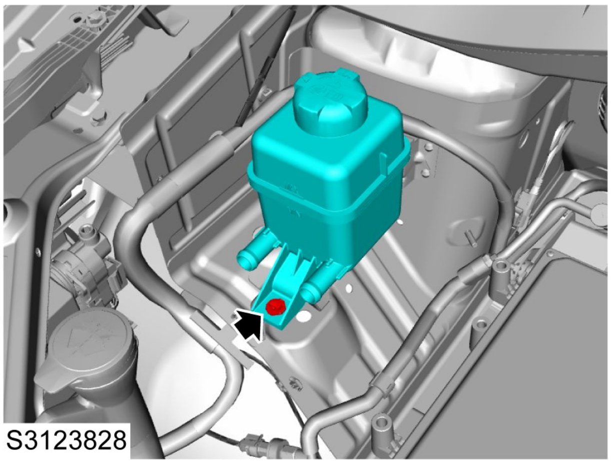
4. Remove 1 bolt fixing the coolant expansion tank to the body.



S3123828

5. Remove the coolant expansion tank - battery.

Refit

1. Fix the coolant expansion tank to the body; fit 1 bolt, tighten it to **4-6Nm**, and check the torque.
2. Connect the hose assembly - battery expansion tank to water pump to the coolant expansion tank and secure it with clamps.
3. Connect the hose assembly - traction battery to battery expansion tank to the coolant expansion tank and secure it with clamps.
4. Refill the coolant.

☞**Coolant - Refill**

Hose Assembly - Electric Water Pump to Traction Battery Heater

Remove

1. Drain the coolant.

☞**Coolant - Drain**

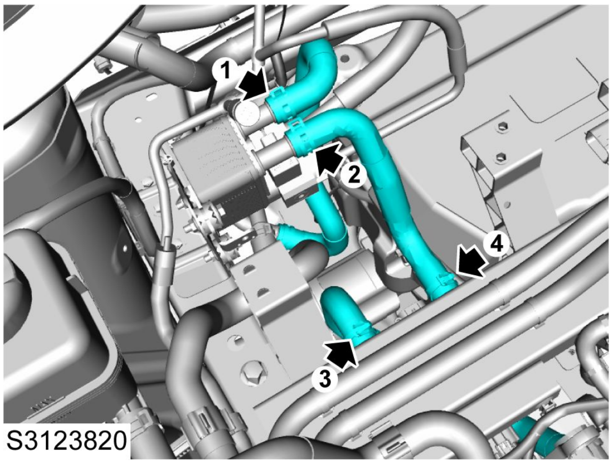
2. Remove the CCU.

☞**Coolant - Drain**

3. Remove the front bottom deflector.

☞**Coolant - Drain**

4. Loosen the clamp (3), and disconnect the hose assembly - electric water pump to traction battery heater from the traction battery heater.



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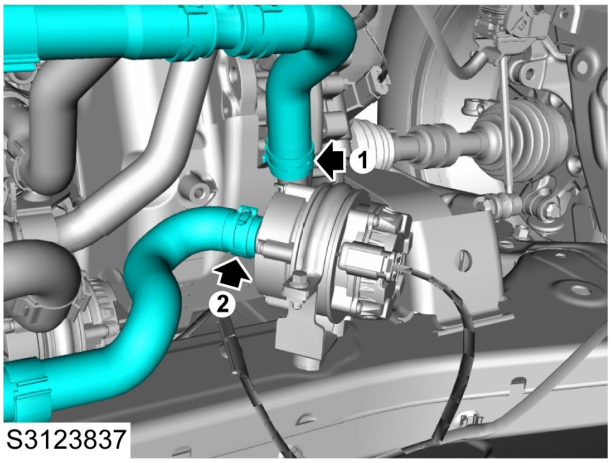
5. Loosen the clamp (1), and disconnect the hose assembly - electric water pump to traction battery heater from the electric water pump.



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6. Loosen the clip, and remove the hose assembly - electric water pump to traction battery heater.

Refit

1. Fit the hose assembly - electric water pump to traction battery heater, and secure it with clips.
2. Connect the hose assembly - electric water pump to traction battery heater to the electric water pump and secure it with clamps.
3. Connect the hose assembly - electric water pump to traction battery heater to the traction battery heater and secure it with clamps.
4. Fit the front bottom deflector.

☞**Coolant - Drain**

5. Fit the CCU.

☞**Coolant - Drain**

6. Refill the coolant.

☞**Coolant - Refill**

Hose Assembly - Traction Battery Heater to Battery Chiller

Remove

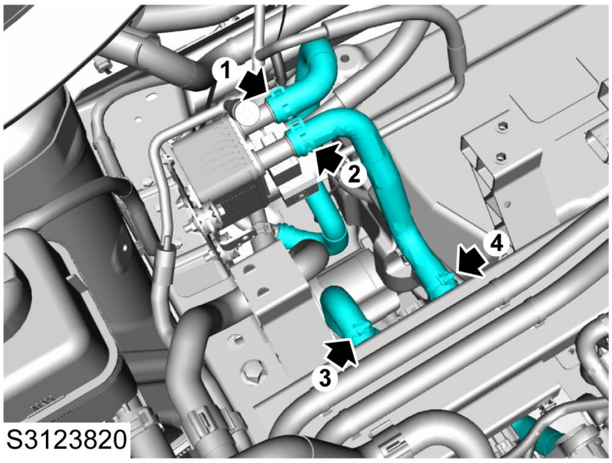
1. Drain the coolant.

☞**Coolant - Drain**

2. Remove the CCU.

☞**Bottom Deflector Remove**

3. Loosen the clamp (2), and disconnect the hose assembly - traction battery heater to battery chiller from the battery chiller.
4. Loosen the clamp (4), and disconnect the hose assembly - traction battery heater to battery chiller from the traction battery heater.



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5. Remove the hose assembly - traction battery heater to battery chiller.

Refit

1. Connect the hose assembly - traction battery heater to battery chiller to the traction battery heater and secure it with clamps.
2. Connect the hose assembly - traction battery heater to battery chiller to the battery chiller and secure it with clamps.
3. Fit the CCU.

☞**Bottom Deflector Refit**

4. Refill the coolant.

☞**Coolant - Refill**

Hose Assembly - Battery Chiller to Battery

Remove

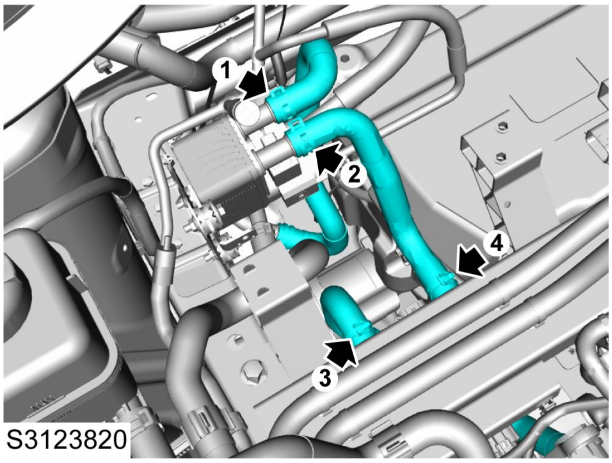
1. Drain the coolant.

☞**Coolant - Drain**

2. Remove the front bottom deflector.

☞**Bottom Deflector Remove**

3. Loosen the clamp (1), and disconnect the hose assembly - battery chiller to battery from the battery chiller.



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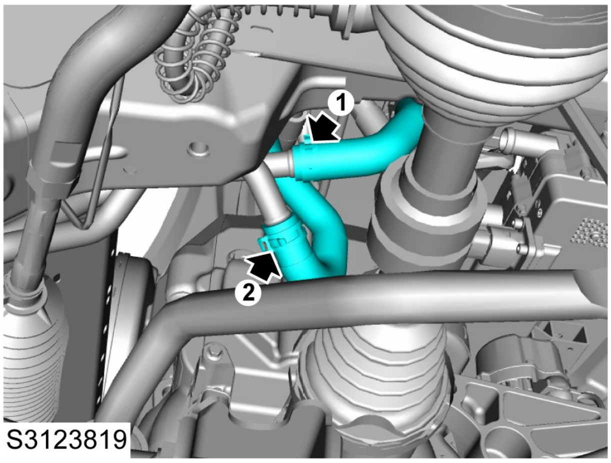
4. Loosen the clamp (2), and disconnect the hose assembly - battery chiller to battery from the traction battery-side hose assembly.



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5. Remove the hose assembly - battery chiller to battery.

Refit

1. Connect the hose assembly - battery chiller to battery to the traction battery-side hose assembly and secure it with clamps.
2. Connect the hose assembly - battery chiller to battery to the battery chiller and secure it with clamps.
3. Fit the front bottom deflector.

☞**Bottom Deflector Refit**

4. Refill the coolant.

☞**Coolant - Refill**

Traction Battery-side Hose Assembly

Remove

1. Drain the coolant.

☞**Coolant - Drain**

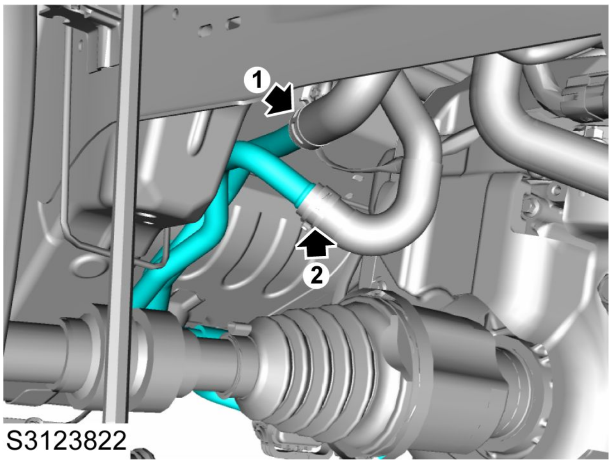
2. Remove the bottom deflector.

☞**Bottom Deflector Remove**

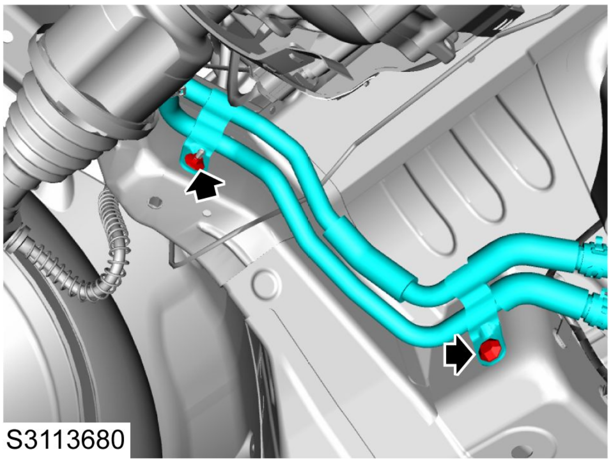
3. Remove the front subframe assembly.

☞**Coolant - Drain**

4. Loosen the clamp (2), and disconnect the traction battery-side hose assembly from the hose assembly - battery chiller to battery.
5. Loosen the clamp (1), and disconnect the traction battery-side hose assembly from the hose assembly - traction battery to battery expansion tank.



6. Remove 2 nuts fixing the traction battery-side hose assembly to the body.



7. Loosen the clip and remove the traction battery-side hose assembly.

Refit

1. Fit the traction battery-side hose assembly and secure it with clips.
2. Fix the traction battery-side hose assembly to the body, fit 2 nuts, tighten them to **4-6Nm** and check the torque.
3. Connect the traction battery-side hose assembly to the hose assembly - traction battery to battery expansion tank, and secure it with clamps.
4. Connect the traction battery-side hose assembly to the hose assembly - battery chiller to battery, and secure it with clamps.
5. Fit the front subframe assembly.

☞**Coolant - Drain**

6. Fit the bottom deflector.

☞**Bottom Deflector Refit**

7. Refill the coolant.

☞**Coolant - Refill**

Hose Assembly - Traction Battery to Battery Expansion Tank

Remove

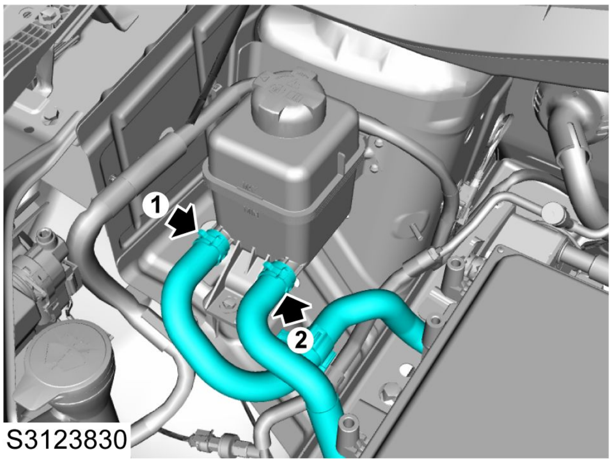
1. Drain the coolant.

☞**Coolant - Drain**

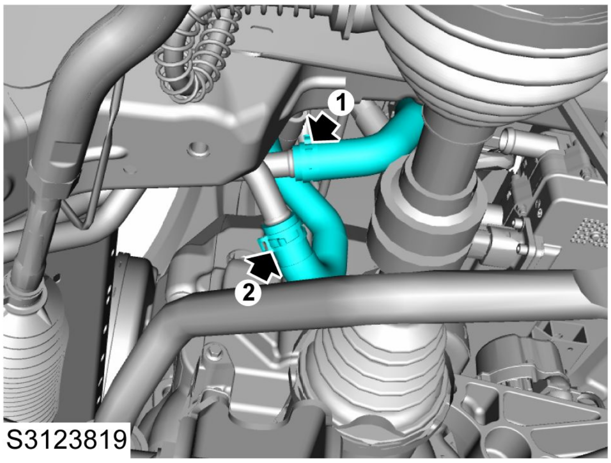
2. Remove the front bottom deflector.

☞**Bottom Deflector Refit**

3. Loosen the clamp (1), and disconnect the hose assembly - traction battery to battery expansion tank from the battery expansion tank.



4. Loosen the clamp (1), and disconnect the hose assembly - traction battery to battery expansion tank from the traction battery-side hose assembly.



5. Loosen the clip and remove the hose assembly - traction battery to battery expansion tank.

Refit

1. Fit the hose assembly - traction battery to battery expansion tank and secure it with clips.
2. Connect the hose assembly - traction battery to battery expansion tank to the traction battery-side hose assembly and secure it with clamps.
3. Connect the hose assembly - traction battery to battery expansion tank to the battery expansion tank and secure it with clamps.
4. Fit the front bottom deflector.

☞**Bottom Deflector Refit**

5. Refill the coolant.

☞**Coolant - Refill**

Hose Assembly - Battery Expansion Tank to Water Pump

Remove

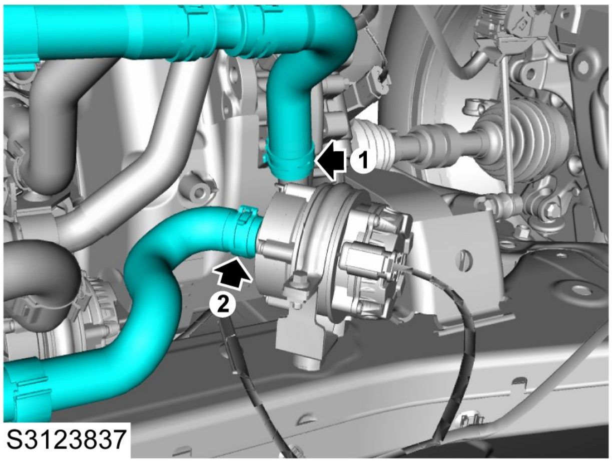
1. Drain the coolant.

☞**Coolant - Drain**

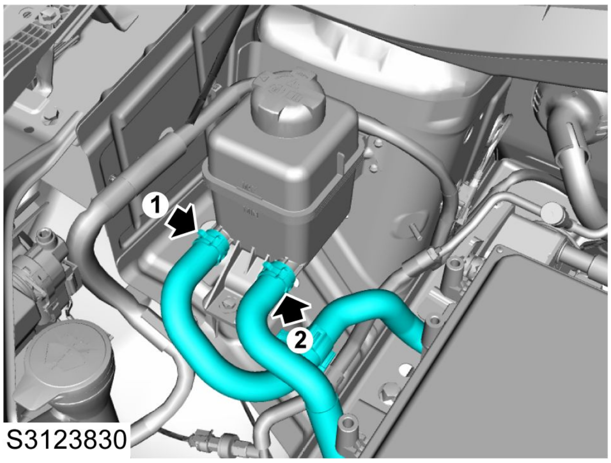
2. Remove the front bottom deflector.

☞**Coolant - Drain**

3. Loosen the clamp (2), and disconnect the hose assembly - battery expansion tank to water pump from the water pump.



4. Loosen the clamp (2), and disconnect the hose assembly - battery expansion tank to water pump from the battery expansion tank.



5. Loosen the clip and remove the hose assembly - battery expansion tank to water pump.

Refit

1. Fit the hose assembly - battery expansion tank to water pump, and secure it with clips.
2. Connect the hose assembly - battery expansion tank to water pump to the battery expansion tank and secure it with clamps.
3. Connect the hose assembly - battery expansion tank to water pump to the water pump and secure it with clamps.
4. Fit the front bottom deflector.

☞**Coolant - Drain**

5. Refill the coolant.

☞**Coolant - Refill**

Battery Chiller

Remove

1. Disconnect the negative battery cable.
2. Remove the manual service disconnect.

☞**Manual Service Disconnect Remove**

3. Remove the front bottom deflector.

☞**Bottom Deflector Remove**

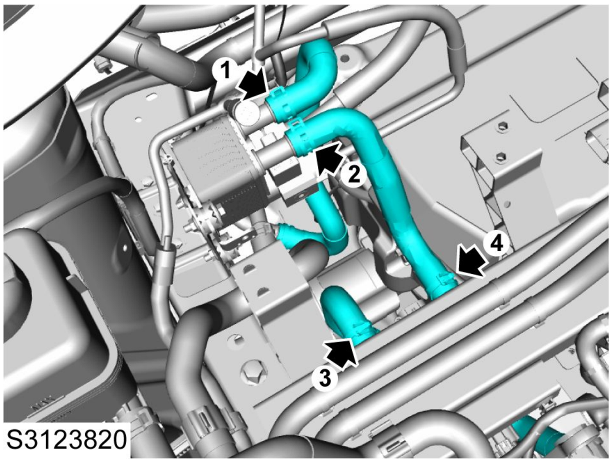
4. Recover the A/C system refrigerant.

☞**Refrigerant Recovery and Refill**

5. Drain the coolant.

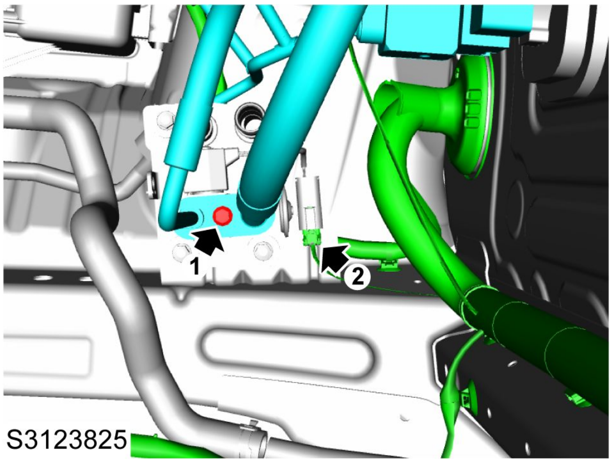
☞**Coolant - Drain**

6. Loosen the clamp (2), and disconnect the hose assembly - traction battery heater to battery chiller from the battery chiller.
7. Loosen the clamp (1), and disconnect the hose assembly - battery chiller to battery from the battery chiller.

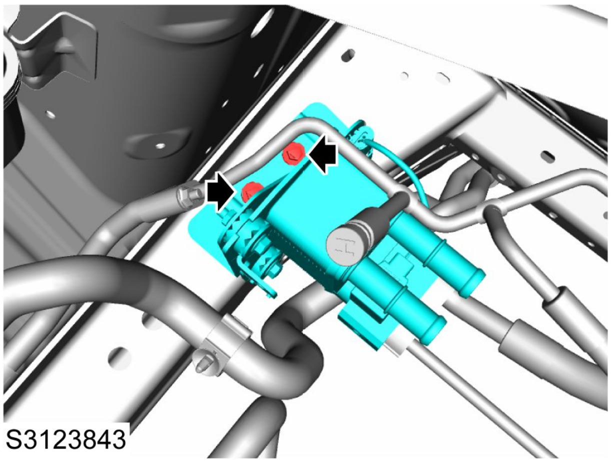


8. Disconnect the connector (2) of the battery chiller.
9. Remove 1 bolt (1) fixing the A/C pipeline to the battery chiller expansion valve, disconnect the pipeline, and discard the seal ring.

Caution: Protect open connections to prevent contamination.



10. Remove 2 bolts fixing the battery chiller to the body.



11. Loosen the clip and remove the battery chiller.

Refit

1. Fix the battery chiller to the body, fit 2 bolts, tighten them to **7-10Nm** and check the torque.
2. Fit a new seal ring on the A/C pipeline and apply clean compressor oil.
3. Fix the A/C pipeline to the battery chiller expansion valve, fit 1 bolt, tighten it to **7-10Nm**, and check the torque.
4. Connect the connector of the battery chiller.
5. Connect the hose assembly - battery chiller to battery to the battery chiller and secure it with clamps.
6. Connect the hose assembly - traction battery heater to battery chiller to the battery chiller and secure it with clamps.
7. Refill the coolant.

☞**Coolant - Refill**

8. Refill the A/C system refrigerant.

☞**Refrigerant Recovery and Refill**

9. Fit the front bottom deflector.

☞**Bottom Deflector Refit**

10. Fit the manual service disconnect.

☞**Manual Service Disconnect Refit**

11. Connect the negative battery cable.

Battery Chiller Expansion Valve

Remove

1. Disconnect the negative battery cable.
2. Remove the manual service disconnect.

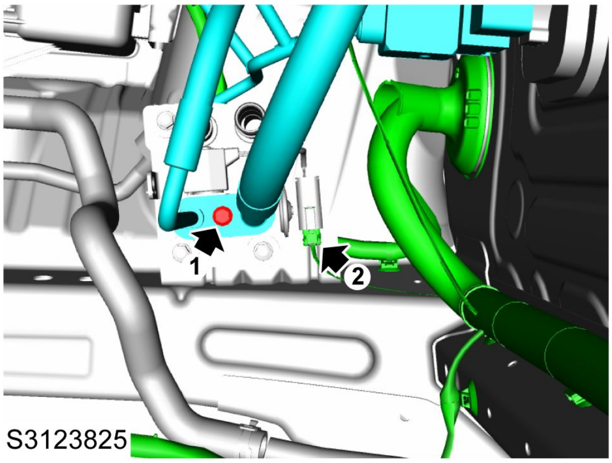
☞**Manual Service Disconnect Remove**

3. Recover the A/C system refrigerant.

☞**Refrigerant Recovery and Refill**

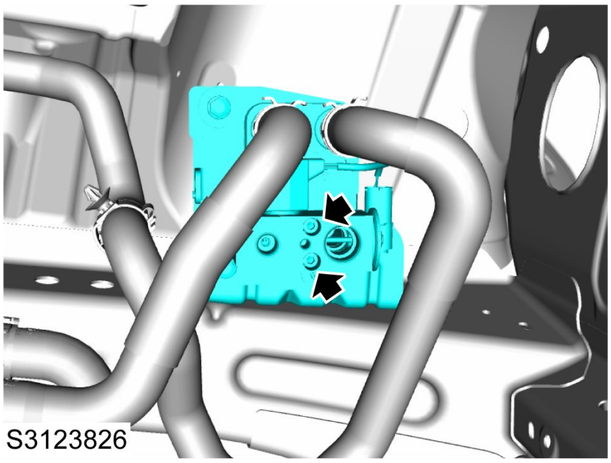
4. Disconnect the connector (2) of the battery chiller expansion valve.
5. Remove 1 bolt (1) fixing the A/C pipeline to the battery chiller expansion valve, disconnect the pipeline, and discard the seal ring.

Caution: Protect open connections to prevent contamination.



6. Remove 2 bolts fixing the battery chiller expansion valve to the battery chiller, remove the battery chiller expansion valve, and discard the seal ring.

Caution: Protect open connections to prevent contamination.



Refit

1. Fit a new seal ring on the battery chiller expansion valve and apply clean compressor oil.
2. Fix the battery chiller expansion valve to the battery chiller, fit 2 bolts, tighten them to **7-10Nm**, and check the torque.
3. Fit a new seal ring on the A/C pipeline and apply clean compressor oil.
4. Fix the A/C pipeline to the battery chiller expansion valve, fit 1 nut, tighten it to **7-10Nm**, and check the torque.
5. Connect the connector of the battery chiller expansion valve.
6. Refill the A/C system refrigerant.

☞**Refrigerant Recovery and Refill**

7. Fit the manual service disconnect.

☞**Manual Service Disconnect Refit**

Electric Water Pump

Remove

1. Disconnect the negative battery cable.
2. Remove the manual service disconnect.

☞**Manual Service Disconnect Remove**

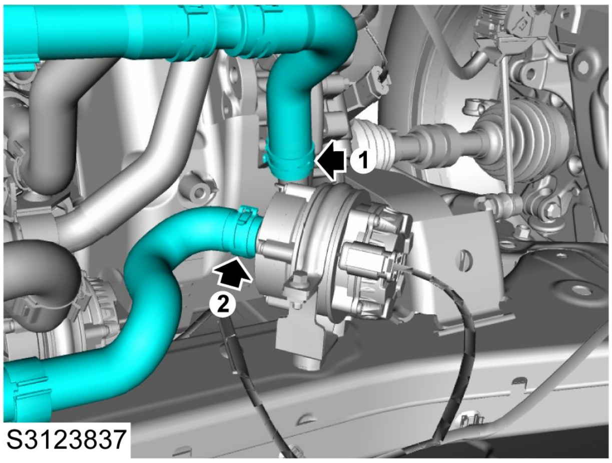
3. Remove the front bottom deflector.

☞**Bottom Deflector Remove**

4. Drain the coolant.

☞**Coolant - Drain**

5. Loosen the clamp (1), and disconnect the hose assembly - electric water pump to traction battery heater from the electric water pump.
6. Loosen the clamp (2), and disconnect the hose assembly - battery expansion tank to water pump from the electric water pump.



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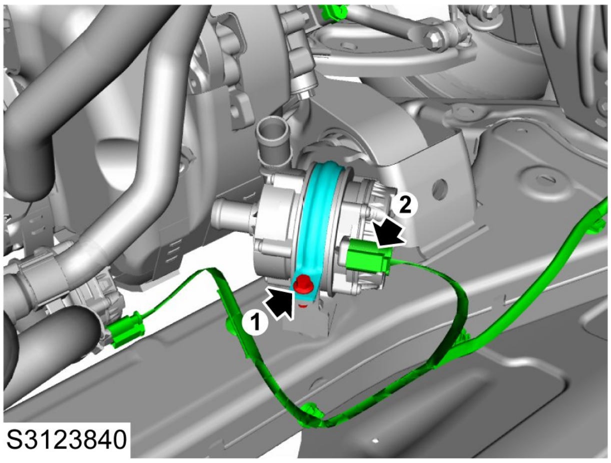
7. Disconnect the connector (2) of the electric water pump.
8. Remove 1 bolt (1) fixing the electric water pump bracket - small to the electric water pump bracket - large, and remove the electric water pump bracket - small.



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9. Remove the electric water pump.

Refit

1. Fit the electric water pump.
2. Fix the electric water pump bracket - small to the electric water pump bracket - large, fit 1 bolt, tighten it to TBD, and check the torque.
3. Connect the connector of the electric water pump.
4. Connect the hose assembly - battery expansion tank to electric water pump to the electric water pump and secure it with clamps.
5. Connect the hose assembly - electric water pump to traction battery heater to the electric water pump and secure it with clamps.
6. Refill the coolant.

☞**Coolant - Refill**

7. Fit the front bottom deflector.

☞**Bottom Deflector Refit**

8. Fit the manual service disconnect.

☞**Manual Service Disconnect Refit**

9. Connect the negative battery cable.

Service Procedures-Cooling Module

Cooling Fan Assembly

Remove

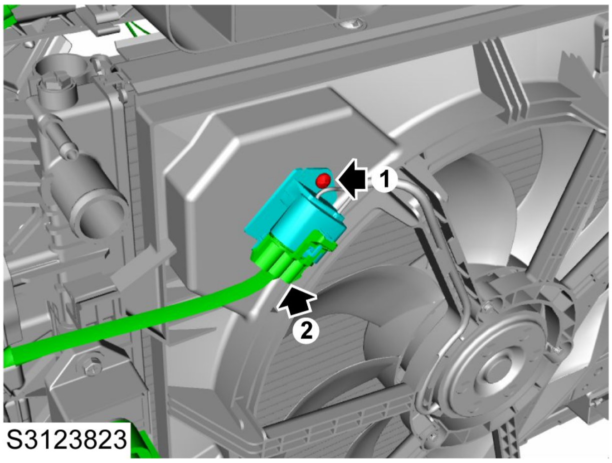
1. Disconnect the negative battery cable.
2. Remove the manual service disconnect.

☞**Manual Service Disconnect Remove**

3. Remove the radiator airflow deflector - upper.

☞**Radiator Airflow Deflector - Upper Remove**

4. Disconnect the connector (2) of the cooling fan.



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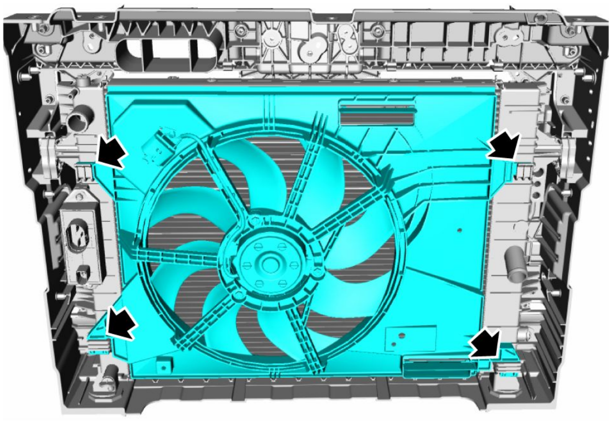
5. Disconnect 4 clips fixing the cooling fan to the radiator.



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6. Remove the cooling fan assembly.

Refit

1. Align the cooling fan assembly to 4 slots on the radiator and snap in to ensure that it is clamped in place.
2. Connect the connector of the cooling fan.
3. Remove the radiator airflow deflector - upper.

☞**Radiator Airflow Deflector- Upper Refit**

4. Fit the manual service disconnect.

☞**Manual Service Disconnect Refit**

5. Connect the negative battery cable.

Cooling Fan Low-speed Resistor

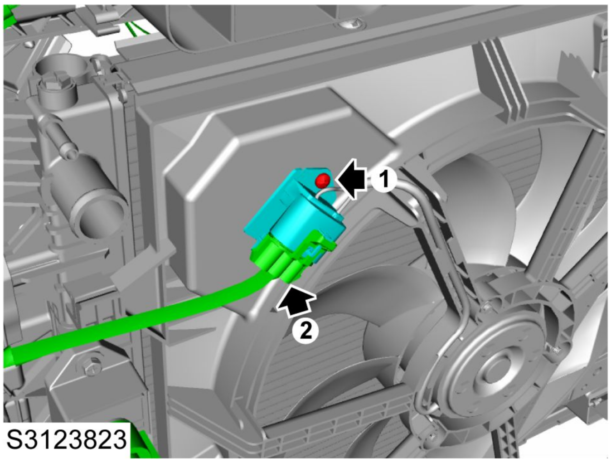
Remove

Warning: Disconnect the battery to prevent operation of the cooling fan, which could cause personal injury.

1. Remove the manual service disconnect.

☞**Manual Service Disconnect Remove**

2. Disconnect the connector (2) of the cooling fan.
3. Remove 1 screw (1) fixing the cooling fan speed regulation resistor to the fan shroud.



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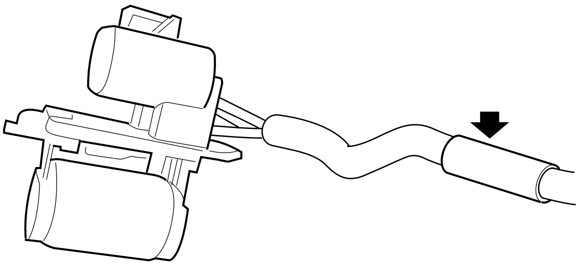
4. Take about 5cm-long wire from the cooling fan speed regulation resistor and cut off the cooling fan speed regulation resistor from the wire at this point.
5. After cutting off the cooling fan speed regulation resistor, remove about 7cm-long insulated leather from the remaining wire.
6. Remove the cooling fan speed regulation resistor.

Refit

1. Take a cooling fan speed regulation resistor to be fitted and cover the heat-shrink tube onto the cooling fan speed regulation resistor wire.



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2. Insert the metal part with insulated leather wire removed into the double-head connector connected with the cooling fan speed regulation resistor wire to be fitted, and clamp them with crimping plier in the T84001, with the tensile capacity of no less than 10 kg

for the joint and no looseness as the standard.

3. Cover the heat-shrink tube onto the double-head connector, and heat the heat-shrink tube with a proper source of heat, to make it shrink and bond to the wire.
4. Fix the cooling fan speed regulation resistor on the fan shroud, fit 1 self-tapping screw and tighten it, fasten the wire with straps and ensure that the location of the wire and its coiled pipe sheath has no interference with blade or hidden danger for interference due to change.
5. Fit the manual service disconnect.

Manual Service Disconnect Refit

6. After the replacement is completed, start the vehicle to inspect the operation of fan, if there is no big buzzer during the operation, the speed regulation condition resumes.

Radiator Assembly

Remove

1. Drain the coolant.

Coolant - Drain

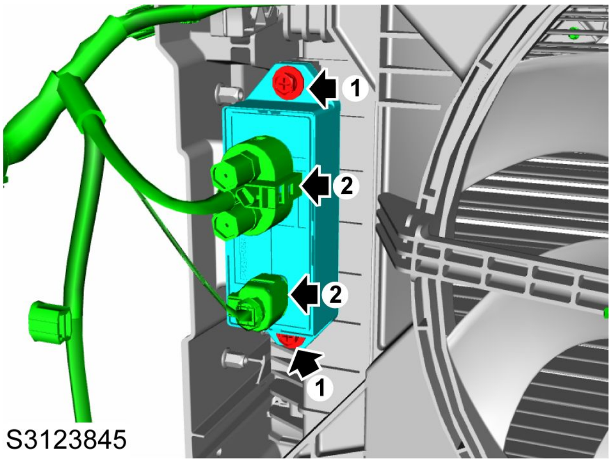
2. Remove the front bumper.

Front Bumper Remove

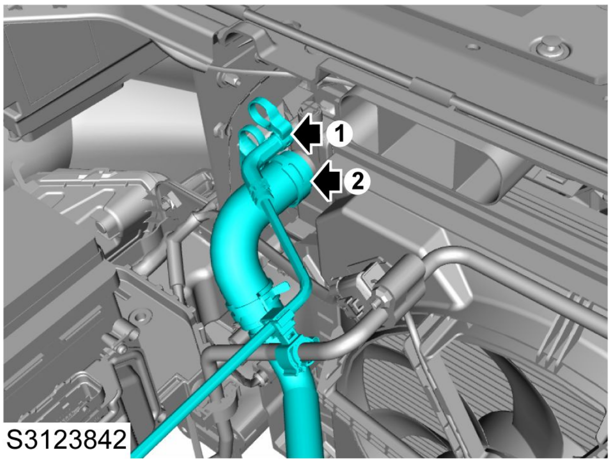
3. Remove the cooling fan assembly.

Cooling Fan Assembly Remove

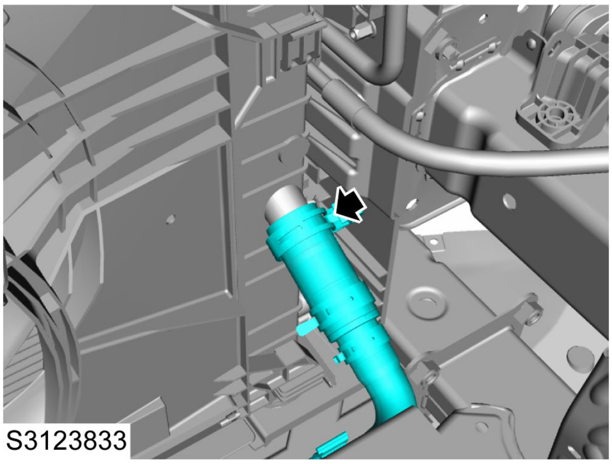
4. Disconnect the connector (2) of the relay.
5. Remove 2 bolts (1) fixing the relay to the radiator assembly.



6. Loosen the clamp (1), and disconnect the overflow pipe assembly from the radiator assembly.
7. Loosen the clamp (2), and disconnect the hose assembly - drive motor to radiator from the radiator assembly.

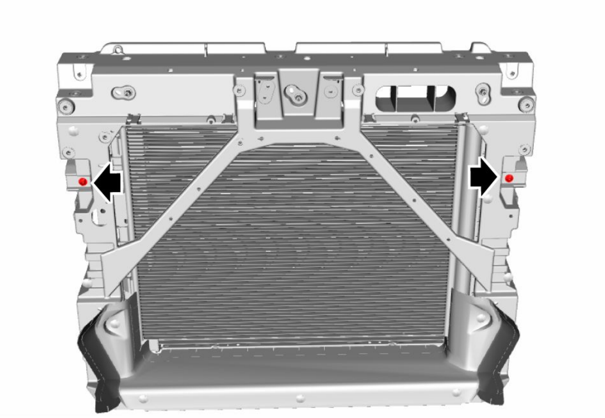


8. Loosen the clamp, and disconnect the hose assembly - radiator to electric water pump from the radiator assembly.



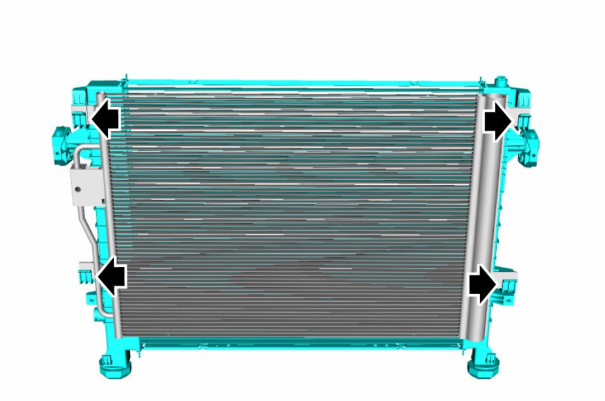
S3123833

9. Remove 2 screws fixing the upper radiator shock pad to the front-end module.



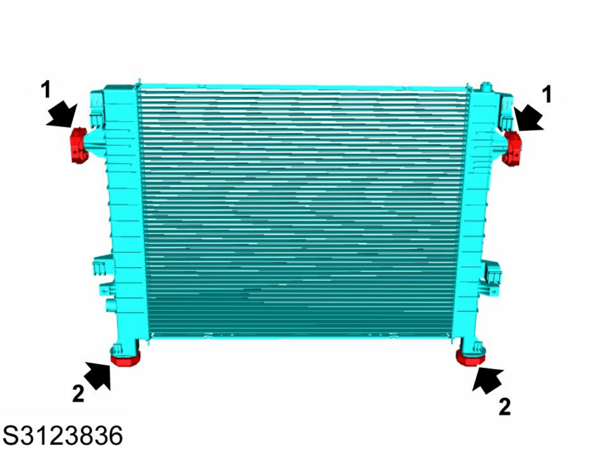
S3123835

10. Move the radiator assembly backwards, to disengage the fixing point of radiator assembly from the front-end module.
11. Disconnect 4 clips fixing the condenser to the radiator.



S3123834

12. Remove the upper and lower radiator shock pads (1) and (2).



S3123836

13. Remove the radiator assembly.

Refit

1. Fit the new upper and lower radiator shock pads to the radiator assembly.
2. Align the condenser with and fit it into 4 clips of the radiator and ensure that it is clamped in place.
3. Fix the radiator assembly to the front-end module.
4. Fix the upper radiator shock pad to the front-end module, fit 2 screws and tighten them.
5. Connect the hose assembly - radiator to electric water pump to the radiator assembly, and secure it with clamps.
6. Connect the hose assembly - drive motor to radiator to the radiator assembly, and secure it with clamps.
7. Connect the overflow pipe assembly to the radiator assembly, and secure it with clamps.
8. Fix the relay to the radiator assembly, fit 2 bolts, tighten them to **5–7Nm**, and check the torque.
9. Connect the connector of the relay.
10. Fit the cooling fan assembly.

☞**Cooling Fan Assembly Refit**

11. Fit the front bumper.

☞**Front Bumper Remove**

12. Refill the coolant.

☞**Coolant - Refill**

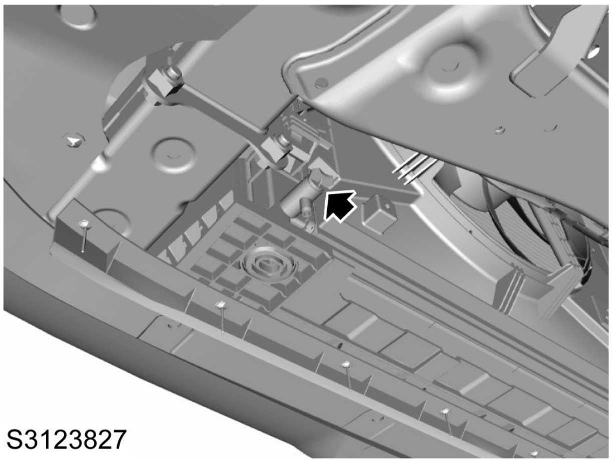
Radiator Drain Valve

Remove

1. Drain the coolant.

☞**Coolant - Drain**

2. Remove the radiator drain valve.



Refit

1. Fit the radiator drain valve.
2. Refill the coolant.

☞**Coolant - Refill**

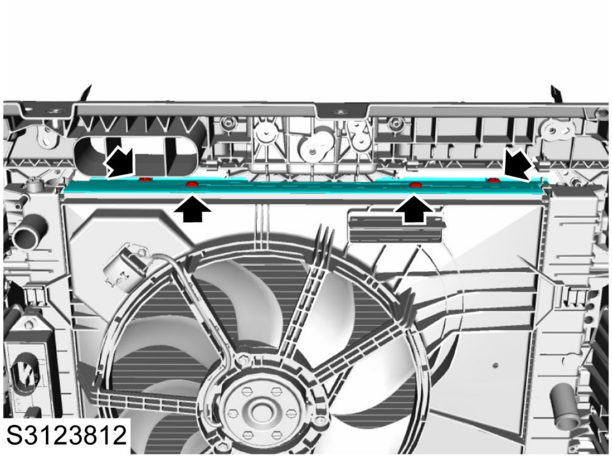
Radiator Airflow Deflector - Upper

Remove

1. Disconnect the negative battery cable.
2. Remove the manual service disconnect.

☞**Manual Service Disconnect Remove**

3. Remove 4 clips fixing the radiator airflow deflector - upper to the radiator and condenser.



4. Remove the radiator airflow deflector - upper.

Refit

1. Fix the radiator airflow deflector - upper to the radiator and condenser, and secure it with clips.
2. Fit the manual service disconnect.

☞**Manual Service Disconnect Refit**

3. Connect the negative battery cable.

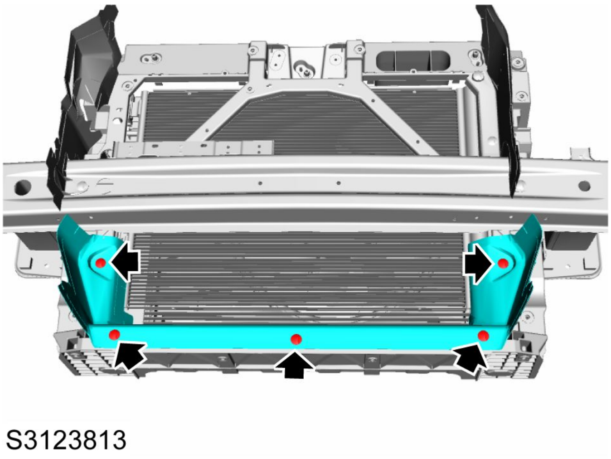
Radiator Airflow Deflector - Lower

Remove

1. Remove the front bumper.

☞**Front Bumper Remove**

2. Remove 5 clips fixing the radiator airflow deflector - lower to the front-end module.



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3. Remove the radiator airflow deflector - lower.

Refit

1. Fix the radiator airflow deflector - lower to the front-end module, and secure it with clips.
2. Fit the front bumper.

☞**Front Bumper Refit**

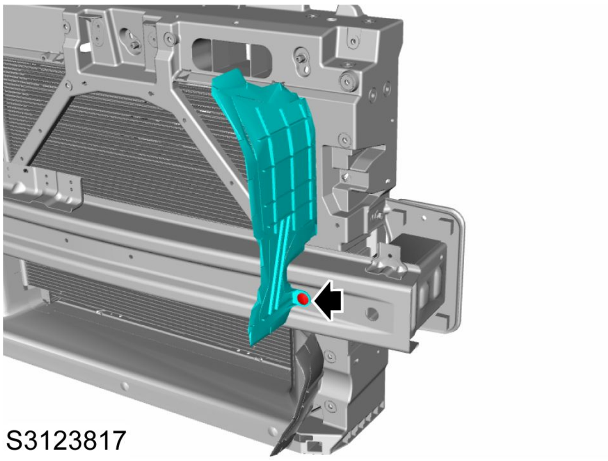
Radiator Airflow Deflector - Left

Remove

1. Remove the front bumper.

☞**Front Bumper Remove**

2. Remove 1 clip fixing the radiator airflow deflector - left to the front bumper beam.



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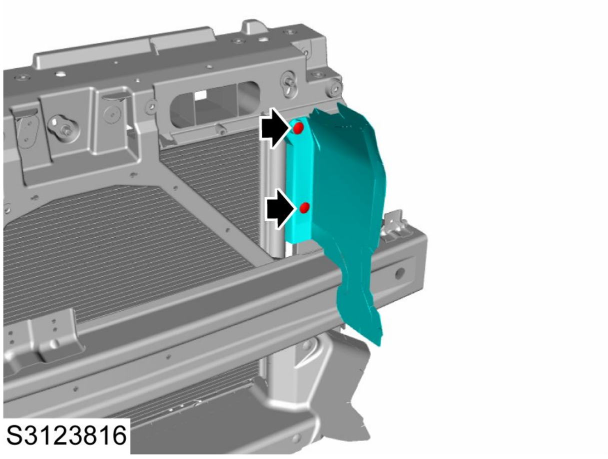
3. Remove 2 clips fixing the radiator airflow deflector - left to the front-end module.



S3123816

4. Remove the radiator airflow deflector - left.

Refit

1. Fix the radiator airflow deflector - left to the front-end module, and secure it with clips.
2. Fix the radiator airflow deflector - left to the front bumper beam, and secure it with clips.
3. Fit the front bumper.

☞**Front Bumper Refit**

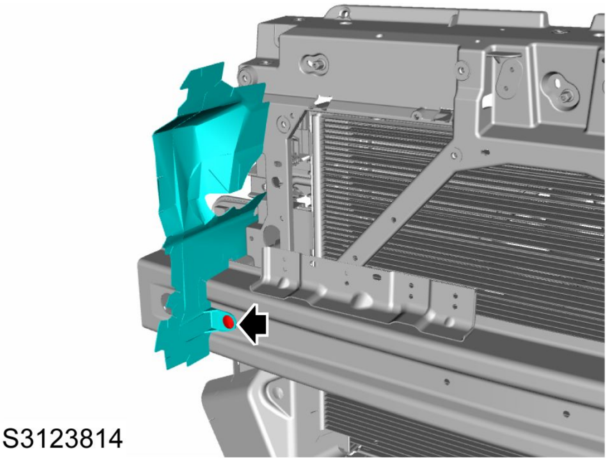
Radiator Airflow Deflector - Right

Remove

1. Remove the front bumper.

☞**Front Bumper Remove**

2. Remove 1 clip fixing the radiator airflow deflector - right to the front bumper beam.



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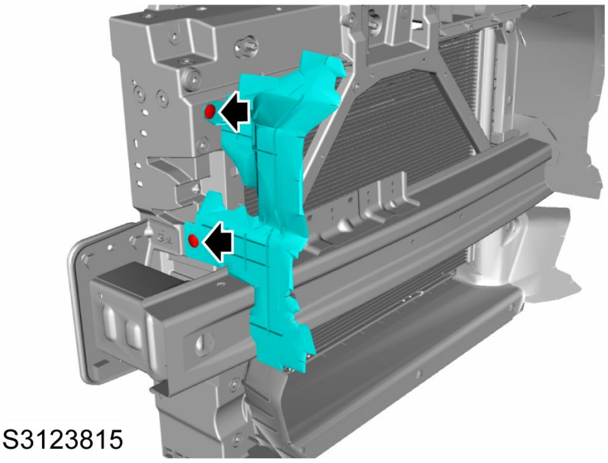
3. Remove 2 clips fixing the radiator airflow deflector - right to the front-end module.



S3123815

4. Remove the radiator airflow deflector - right.

Refit

1. Fix the radiator airflow deflector - right to the front-end module, and secure it with clips.
2. Fix the radiator airflow deflector - right to the front bumper beam, and secure it with clips.
3. Fit the front bumper.

☞**Front Bumper Refit**

Power Drive System

Specifications

Torque

Description	Value
Bolt-PEB to TM	26-34Nm
Bolt-BUS—BAR to TM	14–16Nm
Bolt-Drive motor to EDU	19–25Nm
Bolt-High Voltage Interlock Cover Plate to Casing	7-10Nm
Bolt-Motor Rear End Cover Plate to Casing	7-10Nm
Bolt-Water Pipe Joint to Casing	7-10Nm

Service Procedures

Power Electronic Box

Remove

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***Caution:** When removing or servicing any parts of the high voltage system it is essential that no liquids enter, contaminate or are spilled on components, harnesses or connectors.*

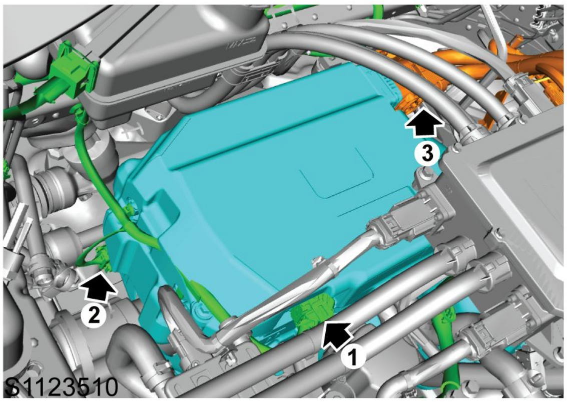
1. Carry out high voltage battery isolation procedure - see Manual Service Disconnect - HV Battery Management System.

Manual Service Disconnect Remove

2. Drain the coolant.

Coolant Drain and Refill

3. Loosen the clamp, disconnect the water inlet/outlet pipes, and move them away.
4. Clean the coolant inside **PEB** and drive motor.
5. Loosen the harness clip, and disconnect the connector (1) from front compartment harness to **PEB** and connector (2) from front compartment harness to drive motor.
6. Disconnect the **PEB** high voltage harness connector (3).



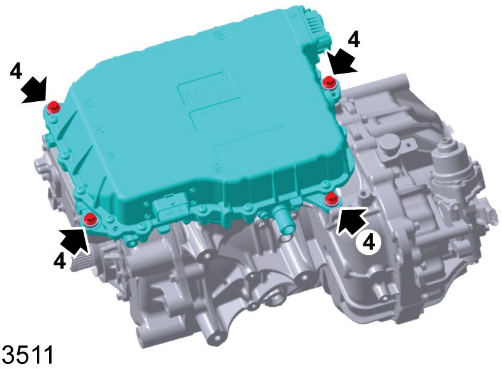
7. Remove electric drive transmission and suspension.

Electric Drive Transmission and Suspension Remove

8. Release the buckles and velcro straps, remove the upper section of the motor acoustic package cover.
9. Remove high voltage interlock cover plate.

High Voltage Interlock Cover Plate Remove

10. Remove 3 bolts fixing the **PEB** assembly to the inside of motor.
11. Remove 4 bolts (4) fixing the **PEB** assembly to the drive motor.



S1123511

12. Remove the **PEB** assembly and discard the seal ring.
13. Remove the **PEB** dampers from **PEB**.

Refit

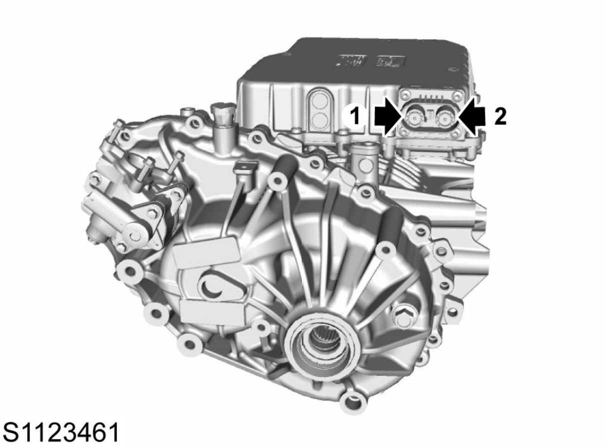
1. Refit the PEB dampers.
2. Refit the new seal rings.
3. Fit the **PEB** assembly to the drive motor, fit 4 bolts, tighten them to **26-34Nm**, check the torque.
4. Carry out a sealing test for water seal integrity

Water Seal Integrity Test

5. Fix the **PEB** assembly to the inside of motor, fit 3 bolts, tighten them to **14–16Nm**, check the torque.
6. In a pollution-free environment with the ambient temperature of 15°C to 45°C and the ambient humidity of RH ≤ 75%, use the high-voltage insulation testing equipment to perform the following operations:

a. Visually check if the **PEB** and high voltage harnesses are intact and free of defects; verify that the **PEB** grounding wire is properly fitted.

b. Connect the positive terminal (red lead) of the high-voltage insulation testing equipment to the terminal of **PEB** harness connector, position 1, 2, and 3 (U, V, W; any one of the three connectors); connect the negative terminal (black lead) of the testing equipment to the grounding wire (position 4) of the **PEB** housing.



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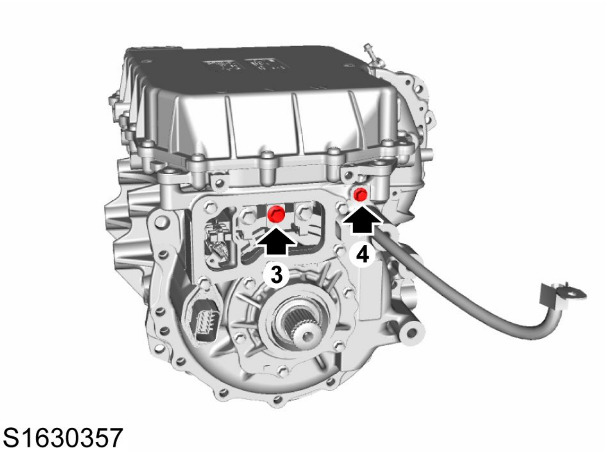

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c. Start the testing equipment, maintain a testing voltage of 1,000Vdc and wait for stable test values.

d. Record the stable test values R1, R2 and R3.

e. If the test value R ≥ 5MΩ, the test is passed. Otherwise, the parts need to be retested or repaired.

7. Fit the high voltage interlock cover plate.

☞**High Voltage Interlock Cover Plate Refit**

8. Fit motor acoustic package cover.
9. Fit the electric drive transmission and suspension.

☞**Electric Drive Transmission and Suspension Refit**

10. Connect the **PEB** high voltage harness connector.
11. Fix the harness to the motor, and secure it with clips.
12. Connect the connectors from front compartment harness to **PEB** and drive motor, and secure them with clips.
13. Fit the water inlet/outlet pipes and secure them with clamps.
14. Refill the coolant.

☞**Coolant Drain and Refill**

15. Fit the manual service disconnect.

☞**Manual Service Disconnect Refit**

16. Connect the negative battery cable.
17. Fit the front compartment trim cover(If Fitted).

☞**Front Compartment Trim Cover Refit(If Fitted)**

18. Program and encode the **PEB**. Refer to Service Programming & Configuration Self-learning Manual, "**PEB** Replacement".

Note: *If the vehicle will not enter READY mode, please disconnect and reconnect the 12V battery and retry.*

Drive motor

Remove

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1. Carry out high voltage battery isolation procedure - see Manual Service Disconnect - HV Battery Management System.

☞**Manual Service Disconnect Remove**

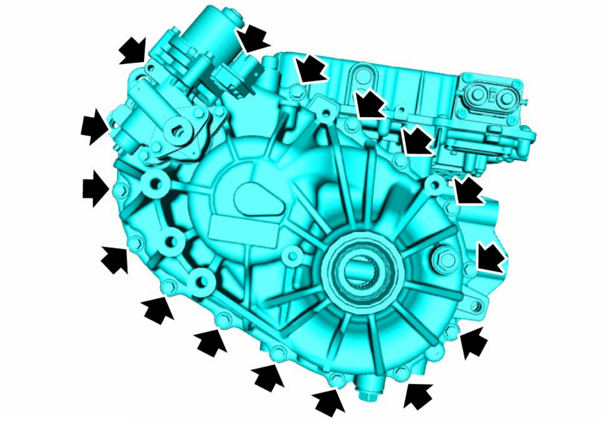
2. Remove the Electric Drive Transmission.

☞**Electric Drive Transmission and Suspension Remove**

3. Remove the **PEB**assembly.

☞**Assembly Remove**

4. Remove the bolts fixing the drive motor to the retarder housing, and disconnect the drive motor from the retarder.



S1123517

5. Disassemble the E-Axis。

☞**Electric Drive Transmission Disassembling**

6. Remove axle shaft oil seal.

☞**Axle Shaft Oil Seal Remove**

7. Remove high voltage interlock cover plate.

☞**High Voltage Interlock Cover Plate Remove**

8. Remove axle shaft connecting shaft.

☞**Axle Shaft Connecting Shaft Remove**

9. Remove the drive motor.

Refit

Warning: Prior to the refitting of ESS, EDS, HV harnesses, EACP, CCU/OBC, charge sockets etc. It is essential that the 12V battery is disconnected and manual service disconnect device is removed.

1. Fit the retarder to the drive motor.

☞**Electric Drive Transmission Disassembling-refit**

2. Fit the bolts fixing the drive motor to the EDU, tighten them to **19-25Nm**, and check the torque.
3. Fit the **PEB**assembly.

☞**Assembly Refit**

4. Refit axle shaft oil seal.

☞**Axle Shaft Oil Seal Refit**

5. Refit high voltage interlock cover plate.

☞**High Voltage Interlock Cover Plate Refit**

6. Refit axle shaft connecting shaft.

☞**Axle Shaft Connecting Shaft Refit**

7. Fit the Electric Drive Transmission.

☞**Electric Drive Transmission and Suspension Refit**

8. Carry out a sealing test for water seal integrity.

☞**Water seal integrity test**

9. Carry out a sealing test of dry chamber.

☞**Sealing test of dry chamber**

10. Fit the manual service disconnect.

☞**Manual Service Disconnect Refit**

11. Connect the negative battery cable.
12. Fit the front compartment trim cover(If Fitted).

☞**Front Compartment Trim Cover Refit(If Fitted)**

High Voltage Interlock Cover Plate

Remove

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1. Remove the manual service disconnect.

☞**Manual Service Disconnect Remove**

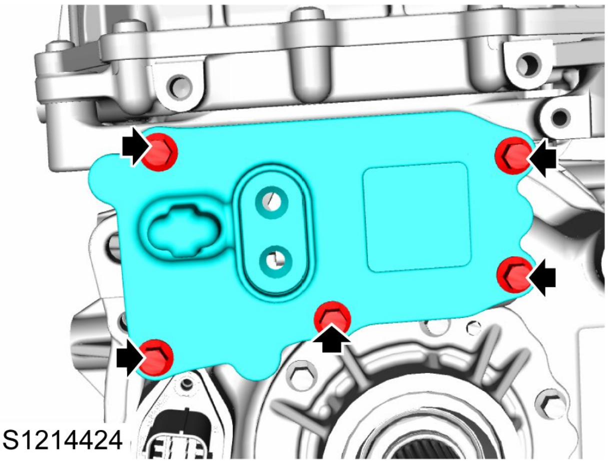
2. Remove the bottom deflector.

☞**Bottom Deflector Remove**

3. Remove front right drive axle shaft assembly.

☞**Front Right Drive Axle Shaft Assembly Remove**

4. Release the buckles and velcro straps, remove the upper section of motor acoustic package cover.
5. Remove 5 bolts fixing the high voltage interlock cover plate to the housing and discard the gaskets.



Refit

1. Fit 5 bolts and new gaskets fixing the high voltage interlock cover plate to the housing, tighten them to **7-10Nm**, and check the torque.
2. Carry out a sealing test of dry chamber.

☞**Sealing test of dry chamber**

3. Fit motor acoustic package cover.
4. Fit front right drive axle shaft assembly.

☞**Front Right Drive Axle Shaft Assembly Refit**

5. Fit the bottom deflector.

☞**Bottom Deflector Refit**

6. Fit the manual service disconnect.

☞**Manual Service Disconnect Remove**

Motor Rear End Cover Plate

Remove

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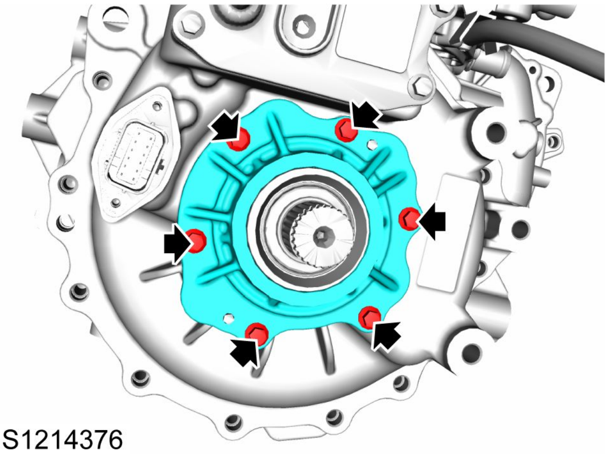
1. Remove the manual service disconnect.

☞ **Manual Service Disconnect Remove**

2. Remove 6 bolts fixing the motor rear end cover plate to the housing and discard the gasket.



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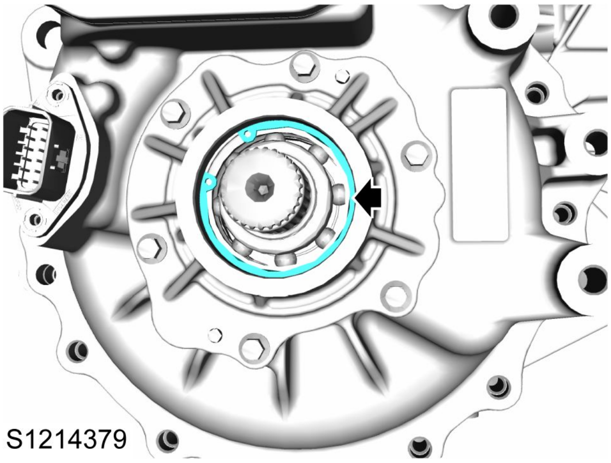
3. Remove the axle shaft oil seal.

☞ **Axle Shaft Oil Seal Remove**

4. Remove the axle shaft bearing hole circlip and pull out the axle shaft connecting shaft.



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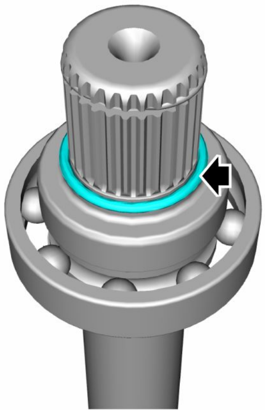
5. Remove and discard the axle shaft connecting shaft O-ring.



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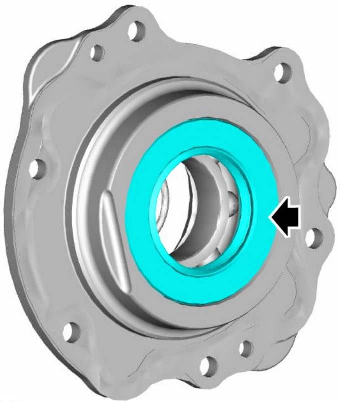
6. Remove the electronic rotor shaft small oil seal fixing to the motor rear end cover plate.



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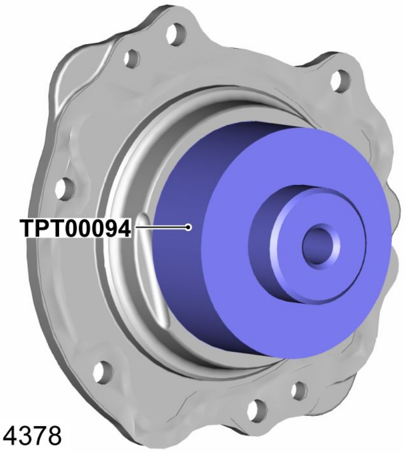
Refit

1. Use special tool **TPT00094**to fit the electronic rotor shaft small oil seal fixing to the motor rear end cover.



S1214378

2. Fit a new axle shaft connecting shaft O-ring.
3. Fit the axle to the motor rear end cover plate.
4. Fit the axle shaft bearing hole circlip.
5. Fit the axle shaft oil seal.

☞**Axle Shaft Oil Seal Refit**

6. Fit 6 bolts and new shims fixing the motor rear end cover to the housing, tighten them to **7-10Nm**, and check the torque.
7. Carry out a sealing test of dry chamber.

☞**Sealing test of dry chamber**

Axle Shaft Connecting Shaft

Remove

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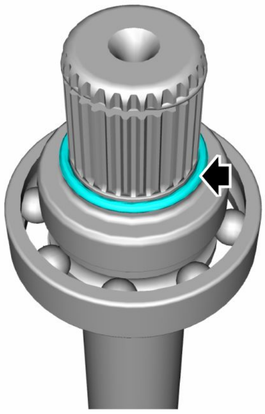
1. Remove motor rear end cover plate.

☞**Motor Rear End Cover Plate Remove**

2. Remove and discard the axle shaft connecting shaft O-ring.



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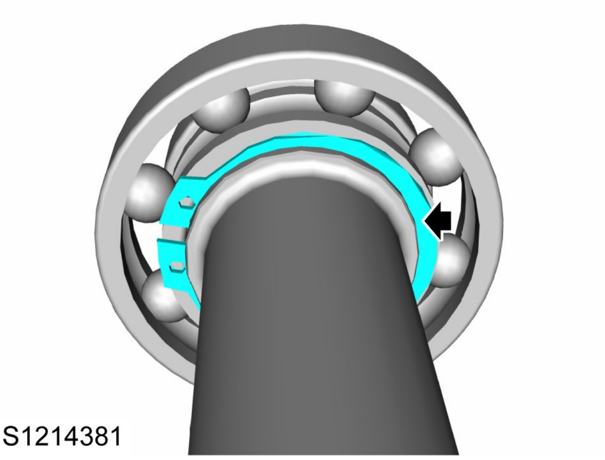
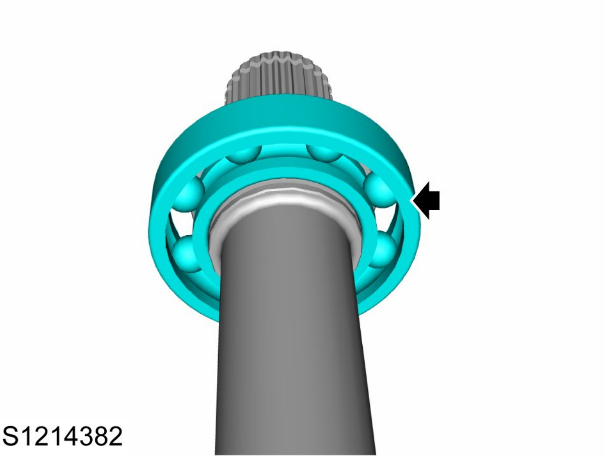
3. Remove and discard the axle shaft bearing inner ring circlip.



4. Remove the axle shaft supporting ball bearing.



Refit

1. Fit the axle shaft supporting ball bearing.
2. Fit a new axle shaft bearing inner ring circlip.
3. Fit a new axle shaft connecting shaft O-ring.
4. Fit the axle shaft connecting shaft assembly to motor rear end cover plate, and fit the motor rear end cover plate.

☞**Motor Rear End Cover Plate Refit**

Axle Shaft Oil Seal

Remove

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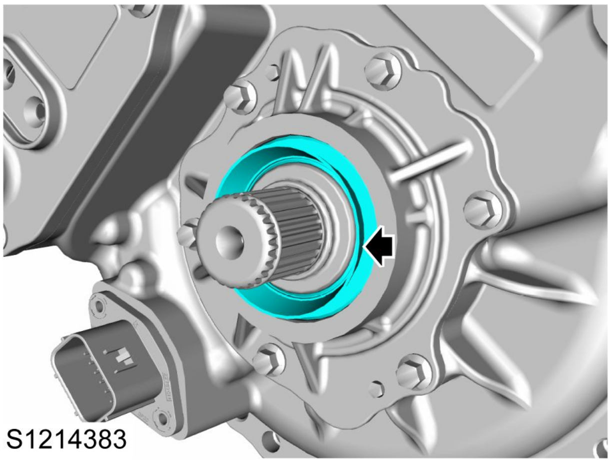
1. Remove the manual service disconnect.

☞**Manual Service Disconnect Remove**

2. Remove the front right axle shaft assembly.

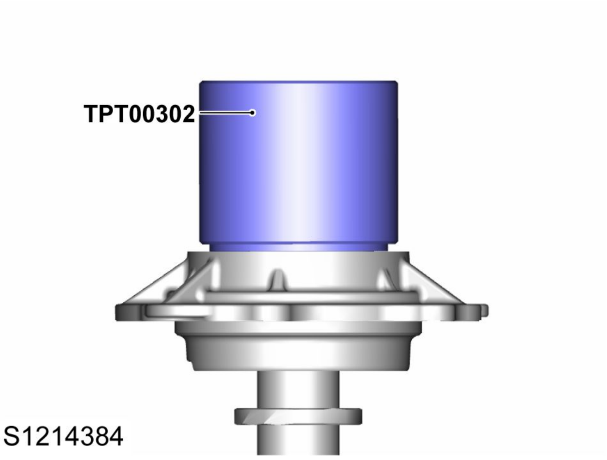
☞**Front Right Drive Axle Shaft Assembly Remove**

3. Release the buckles and velcro straps, remove the upper section of motor acoustic package cover.
4. Remove 6 bolts fixing the motor rear end cover plate to the housing and discard the gasket.
5. Remove the axle shaft oil seal.



Refit

1. Fit the axle shaft oil seal with special tool**TPT00302** .



2. Fit 6 bolts fixing the motor rear end cover plate to the housing and tighten to **7-10Nm** , and check the torque.
3. Refit motor acoustic package cover.
4. Fit the front right axle shaft assembly.

☞**Front Right Drive Axle Shaft Assembly Refit**

5. Carry out a sealing test of dry chamber.

☞**Sealing test of dry chamber**

Hose Fitting

Remove

Warning: Non qualified staff are NOT permitted to dismantle high voltage systems or components (including, ESS, Electric Drive Transmission, PEB, EAC, HV harnesses, OBC, DCDC, Charging sockets etc).

Warning: Prior to opening any high voltage circuits the systems MUST be checked using a suitable multi meter to ensure they carry no high voltage current. Where there is need to work with the high voltage system is essential that the correct 'make safe' procedure is followed - see Manual Service Disconnect procedure in the Service Repair manual. After disconnecting the Manual Service Disconnect (MSD), always wait 5 minutes prior to commencing any checks for residual voltage etc.

Warning: Any qualified personnel working on high voltage systems or components MUST wear the correct insulated personal protective equipment (PPE). All PPE must be regularly checked and tested for condition and integrity.

Caution: When removing or servicing any parts of the high voltage system it is essential that no liquids enter, contaminate or are spilled on components, harnesses or connectors.

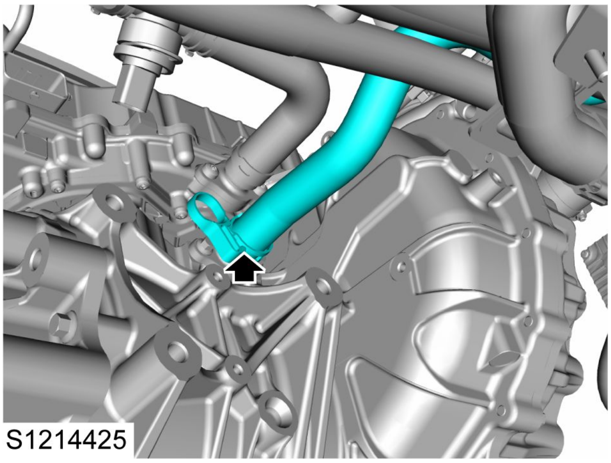
1. Remove the manual service disconnect.

☞**Manual Service Disconnect Remove**

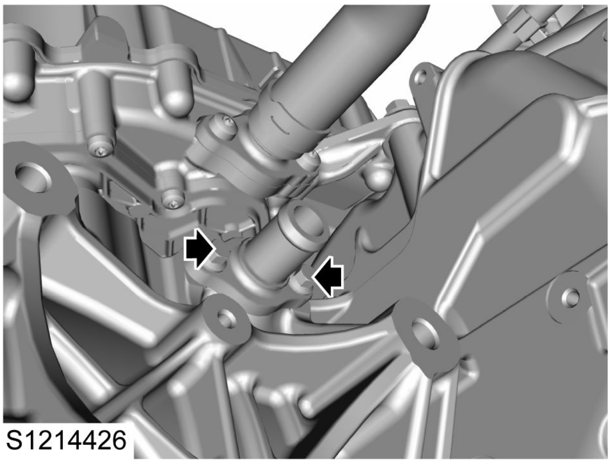
2. Drain the coolant.

☞**Coolant Drain and Refill**

3. Disconnect the hose from the pipe fitting.



4. Remove 2 bolts fixing the pipe fitting to the housing and discard the O-rings.



S1214426

Refit

1. Fit 2 bolts and new O-rings fixing the pipe fitting to the housing, tighten them to **7-10Nm**, and check the torque.
2. Connect the hose to the pipe fitting.
3. Carry out a sealing test for water seal integrity.

☞**Water seal integrity test**

4. Refill the coolant.

☞**Refill - PEB Cooling**

5. Fit the manual service disconnect.

☞**Manual Service Disconnect Refit**

6. Connect the negative battery cable.

Axle Shaft Sealing Test

Water Seal Integrity Test

Warning: Non qualified staff are NOT permitted to dismantle high voltage systems or components (including, ESS, Electric Drive Transmission, PEB, EAC, HV harnesses, OBC, DCDC, Charging sockets etc).

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Warning: Any qualified personnel working on high voltage systems or components MUST wear the correct insulated personal protective equipment (PPE). All PPE must be regularly checked and tested for condition and integrity.

Caution: When removing or servicing any parts of the high voltage system it is essential that no liquids enter, contaminate or are spilled on components, harnesses or connectors.

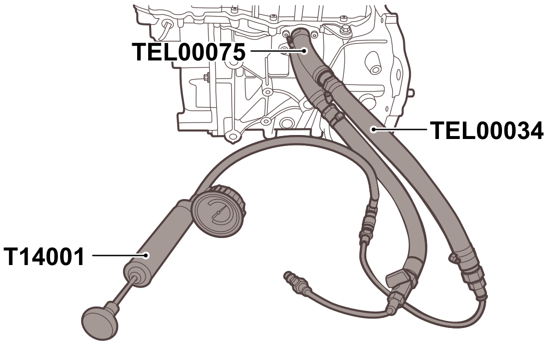
1. Remove the manual service disconnect.

☞**Manual Service Disconnect Remove**

2. Drain the coolant.

☞**Coolant Drain and Refill**

3. Disconnect the water inlet/outlet hoses from**PEB**.
4. Disconnect the water inlet/outlet hoses from motor.
5. Fit the special tool**TEL00075** , **TEL00034** & **T14001**to pipe fitting of **PEB** and motor.



S1214419

6. Charge the system pressure to 2bar (Absolute pressure, the pressure gauge display is 1bar) ,hold the pressure for 10 seconds and test for 10 seconds. The system integrity is OK if the system pressure drop less than 100Pa. Repair the dew point and do the test until

pass the test.

7. Connect water inlet/outlet hoses to **PEB**.
8. Connect water inlet/outlet hoses to motor.
9. Refill the coolant.

Coolant Drain and Refill

10. Fit the manual service disconnect.

Manual Service Disconnect Refit

Sealing Test of Dry Chamber

Warning: Non qualified staff are NOT permitted to dismantle high voltage systems or components (including, ESS, Electric Drive Transmission, PEB, EAC, HV harnesses, OBC, DCDC, Charging sockets etc).

Warning: Prior to opening any high voltage circuits the systems MUST be checked using a suitable multi meter to ensure they carry no high voltage current. Where there is need to work with the high voltage system is essential that the correct 'make safe' procedure is followed - see Manual Service Disconnect procedure in the Service Repair manual. After disconnecting the Manual Service Disconnect (MSD), always wait 5 minutes prior to commencing any checks for residual voltage etc.

Warning: Any qualified personnel working on high voltage systems or components MUST wear the correct insulated personal protective equipment (PPE). All PPE must be regularly checked and tested for condition and integrity.

Caution: When removing or servicing any parts of the high voltage system it is essential that no liquids enter, contaminate or are spilled on components, harnesses or connectors.

1. Switch off the vehicle power/ignition and wait 5 minutes before proceeding.

Caution: Please wait 5 minutes after the vehicle power system has been switched off to allow any power stored within the PEB capacitors to have been discharged.

2. Disconnect the negative battery cable.
3. Remove the manual service disconnect.

Manual Service Disconnect Remove

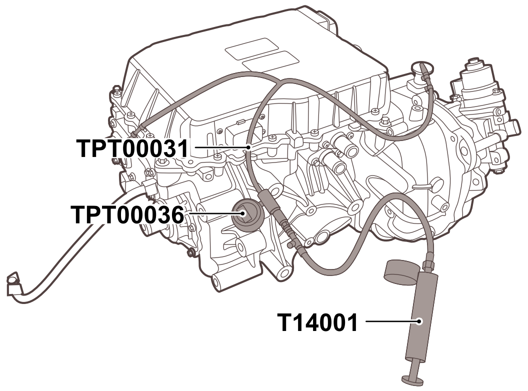
4. Remove high voltage interlock cover plate.

High Voltage Interlock Cover Plate Remove

5. Remove ventilation plug from the plate.
6. Refit high voltage interlock cover plate.

High Voltage Interlock Cover Plate Refit

7. Remove ventilation plug from the retarder housing.
8. Use the white plug in special tool**TPT00301**plug up one hole in the plate.
9. Use special tool**TPT00301** , **TEL00036** and **T14001**, plug the other hole in the plate and the hole at retarder housing. Use hand pressure to hold these in position.



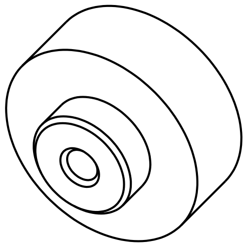
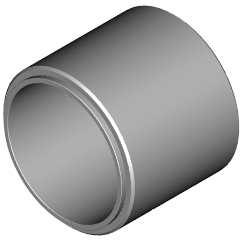
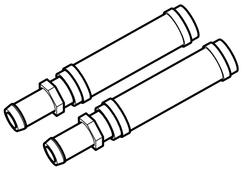
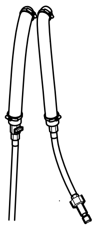
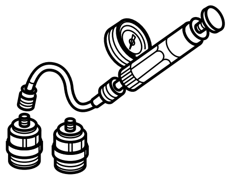
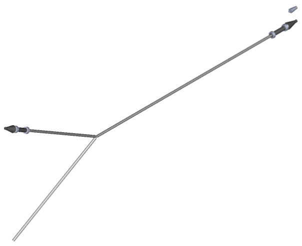
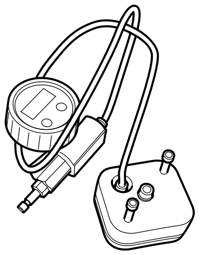
S1214456

10. Operate the pressure tester to apply a pressure of 0.25 bar (25kPa). The pressure should be monitored over 30 seconds, if the pressure drop is less than 80Pa then the integrity is acceptable. Carry out any necessary repairs until the test is successful.
11. Remove special tools.
12. Refit plugs to retarder housing and high voltage interlock cover plate.
13. Fit the manual service disconnect.

Manual Service Disconnect Refit

14. Connect the negative battery cable.

Special Tools

Tool Number	Description	Picture
TPT00094	Wheel drive shaft seal installer	 TPT00094
TPT00302	The EDS drive shaft seal installer	 TPT00302
TEL00075	Pipe connector	 TEL00075
TEL00034	Cooling system leak test tool	 TEL00034
T14001	Cooling system pressure test kit	 T14001
TPT00301	Kit-pressure test connector	 TPT00301
TEL00036	Manual service device plug	 TEL00036

HV Battery Pack and Charging System

Specifications

Torque

Description	Value
Bolt-Energy storage system to body	55–65Nm
Bolt-Energy storage system grounding to body	7–10Nm
Nut-Battery negative cable to CCU	11–15Nm
Bolt-CCU to CCU bracket	19–25Nm
-	
Bolt-Battery Heater to body	7–10Nm
Bolt-Battery Heater grounding wire to body	7–10Nm
Bolt-Fast charge to PDU	13–17Nm
Bolt-The PDU bracket to PDU	5–7Nm
Nut-charger grounding wire to body	7–10Nm
Bolt-Charging Port to bracket	7–10Nm
Bolt-Electric Vehicle Communication Controller to battery tray	7–10Nm

Service Procedures

Manual Service Disconnect

Remove

1. Ensure the START/STOP switch is OFF, remove keys from the vehicle and place in a secure location at least 2 metres from the vehicle and wait 5 mins before carrying out next step.

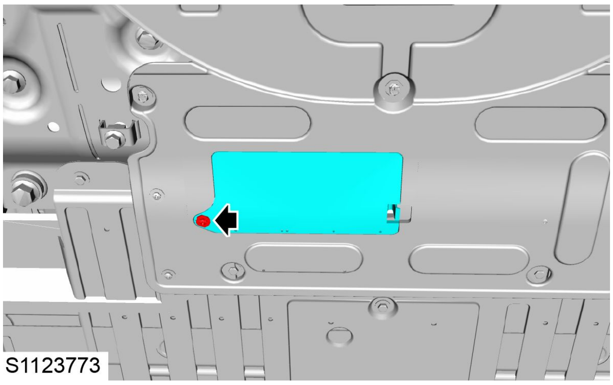
Caution: Please wait 5 minutes after the vehicle power system has been switched off to allow any power stored within the PEB capacitors to have been discharged.

Warning: ALWAYS ensure the correct PPE is worn when working on, or with HV components.

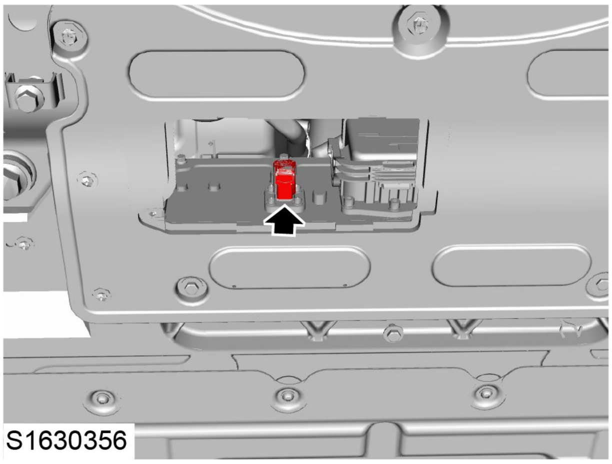
2. Remove the front compartment trim cover side cover plate.
3. Disconnect the negative battery cable.
4. Raise the vehicle on a lift.

Warning: Do not work on or under a vehicle supported only by a jack.Always support the vehicle on safety stands.

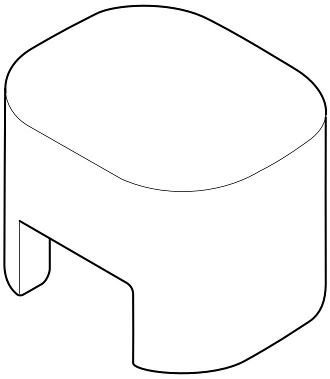
5. Remove 1 screw fixing the manual service cover plate to the bottom deflector, and remove the manual service cover plate.


S1123773

6. Loosen the clips and remove the manual service disconnect from the high voltage battery pack.


S1630356

7. Fit the special tool **TEL00052** to the manual service disconnect base.


TEL00052

Refit

1. Remove the special tool **TEL00052** of cover from the manual service disconnect base.
2. Fit the manual service disconnect and secure it with clips.
3. Fix the manual service cover plate to the bottom deflector, fit and tighten 1 screw.
4. Lower the vehicle.
5. Connect the negative battery cable.
6. Fit the front compartment trim cover side cover plate.

High-voltage Battery Pack

Remove

1. Carry out high voltage battery isolation procedure - see Manual Service Disconnect.

☞**Manual Service Disconnect Remove**

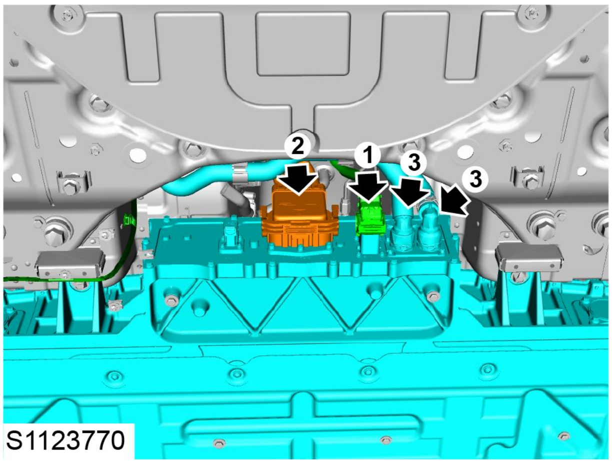
2. Remove the bottom battery protection plate.

☞**Bottom Battery Protection Plate Refit**

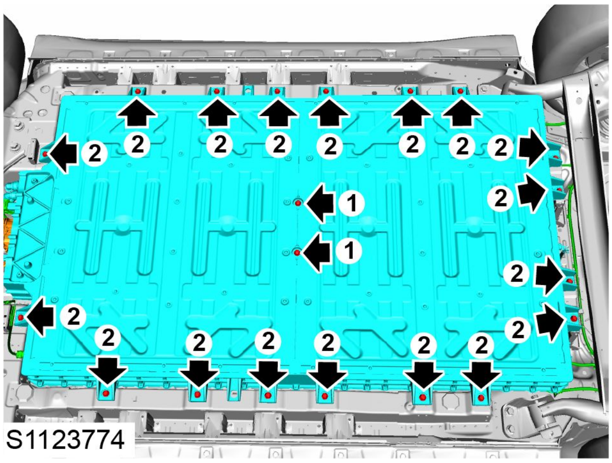
3. Drain the **ESS** coolant.

☞**Coolant Drain and Refill**

4. Disconnect the low voltage harness connector (1) from the high voltage battery pack.
5. Disconnect the high voltage harness connector (2) from the high voltage battery pack.
6. Disconnect the cooling water hoses (3) from the high voltage battery pack.



7. Disconnect the low voltage harness connector from the pressure switch of high voltage battery pack.
8. Use a multimeter (DCV, the range is greater than 400V) to measure if there is high voltage between terminals of high-voltage battery pack high voltage connectors, between the terminals and the ground and between terminals in high-voltage connectors at the high voltage harness end. If the voltage is zero, continue removing.
9. Remove 1 nut fixing the high voltage battery pack grounding wire to the body.
10. Remove 2 bolts (1) fixing the high voltage battery pack to the body.
11. Place special tool **TEL00050** of high voltage battery pack carrier under the high voltage battery pack on the lifting station, and adjust the carrier to the proper position.
12. Slowly raise the high voltage battery pack carrier till it reaches the bottom of the high voltage battery pack.
13. Remove 18 bolts (2) fixing the high voltage battery pack to the body.



14. Slowly lower the high voltage battery pack on the high voltage battery pack carrier and remove it from the lifting station.

Warning: DO NOT attempt to move the HV battery pack carrier when it is in an extended state.

Refit

1. Raise the vehicle on a lift.

Warning: Do not work on or under a vehicle supported only by a jack.Always support the vehicle on safety stands.

2. Slowly raise the high voltage battery pack by using special tool **TEL00050** of high voltage battery pack carrier, and adjust the carrier to the proper position for refit of high voltage battery pack.
3. Continue to raise the high voltage battery pack carrier until the mounting surface of the high voltage battery pack comes into contact with the body mounting surface.

Warning: DO NOT attempt to move the HV battery pack carrier when it is in an extended state.

4. Fix the high voltage battery pack to the body, fit 18 bolts, tighten them to **55–65Nm**, check the torque.
5. Lower the high voltage battery pack carrier and remove it from the lifting station.
6. Fix the high voltage battery pack to the body, fit 2 bolts, tighten them to **55–65Nm**, check the torque.
7. Fix the high voltage battery pack grounding wire to the body, fit 1 nut, tighten it to **7–10Nm**, check the torque.
8. Connect harness connectors to the high voltage battery pack.
9. Connect the cooling water hoses to the high voltage battery pack.
10. Refill the **ESS** coolant.

☞**Coolant Refill-ESS**

11. Fit the manual service disconnect.

☞**Manual Service Disconnect Refit**

12. FIt the bottom battery protection plate.

Bottom Battery Protection Plate Refit

13. Connect the negative battery cable.
14. Program and encode the battery management system (**BMS**). Refer to Service Programming & Configuration Self-learning Manual, "**BMS** section".

Combined Charging Unit (CCU)

Remove

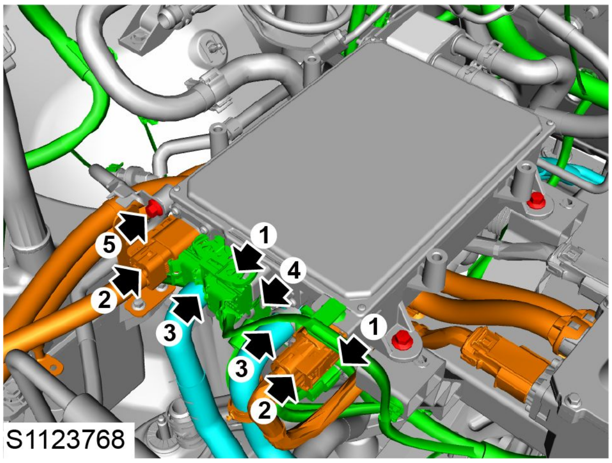
1. Carry out high voltage battery isolation procedure - see Manual Service Disconnect.

Manual Service Disconnect Remove

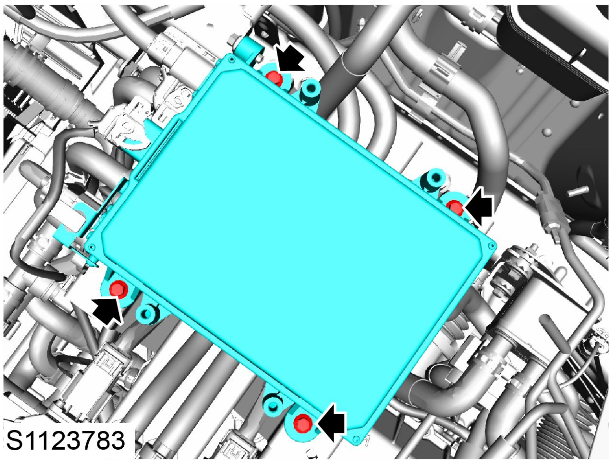
2. Drain the coolant.

Coolant Drain and Refill

3. Remove the combined charging unit - 7KW.
   a. Disconnect the low voltage harness connector (1) from the combined charging unit.
   b. Disconnect the high voltage harness connector (2) from the combined charging unit.
   c. Loosen the retaining clamp, and disconnect the combined charging unit water inlet and outlet hoses (3).
   d. Remove 1 bolt (4) fixing the harness to the combined charging unit.
   e. Remove the combined charging unit grounding bolt (5).



   f. Remove 4 bolts fixing the combined charging unit to the bracket, remove the combined charging unit.



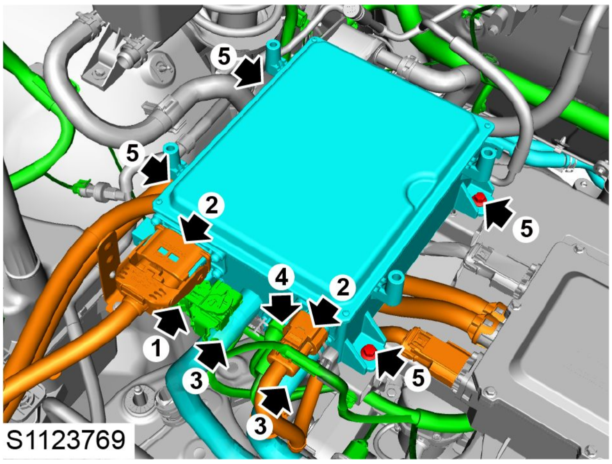
4. Remove the combined charging unit - 11KW.
   a. Disconnect the low voltage harness connector (1) from the combined charging unit.

b. Disconnect the high voltage harness connector (2) from the combined charging unit.

c. Loosen the retaining clamp, and disconnect the combined charging unit water inlet and outlet hoses (3).

d. Remove 1 bolt (4) fixing the harness to the combined charging unit.

e. Remove 4 bolts (5) fixing the combined charging unit to the bracket.



f. Remove the grounding bolt of the combined charging unit, and remove the combined charging unit.

Refit

1. Fit the combined charging unit grounding bolt, tighten it to **11–15Nm**, check the torque.
2. Fix the combined charging unit to the combined charging unit bracket, fit 4 bolts, tighten them to **19–25Nm**, check the torque.
3. Fix the harness to the combined charging unit, fit 1 bolt, tighten it to , check the torque
4. Fit the combined charging unit water inlet and outlet hoses, and tighten them with clamps.
5. Connect the harness connector to the combined charging unit.
6. Refill the coolant.

Coolant Drain and Refill

7. Fit the manual service disconnect.

Manual Service Disconnect Refit

8. Connect the negative battery cable.
9. Program and encode the combined charging unit. Refer to Service Programming & Configuration Self-learning Manual, CCU section.

Battery Heater

Remove

1. Carry out high voltage battery isolation procedure - see Manual Service Disconnect.

Manual Service Disconnect Remove

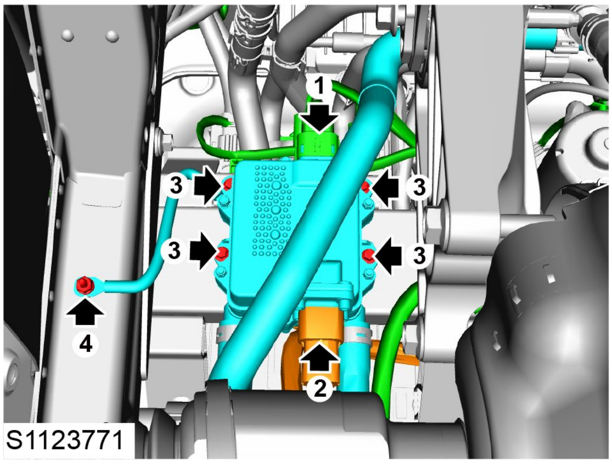
2. Drain the coolant.

Coolant Drain and Refill

3. Remove the bottom deflector.

Manual Service Disconnect Remove

4. Loosen the retaining clamps, and disconnect the water inlet and outlet hoses.
5. Disconnect the low voltage harness connector (1).
6. Disconnect the high voltage harness connector (2).
7. Remove the grounding nut (4) of the battery heater.
8. Remove 4 bolts (3) fixing the battery heater assembly to the body, and remove the battery heater assembly.



Refit

1. Fix the battery heater assembly to the body, fit 4 bolts, tighten them to **7–10Nm**, check the torque.
2. Fit the battery heater ground harness, fit 1 nut, tighten it to **7–10Nm**, check the torque.
3. Connect the harness connector.
4. Connect the water inlet and outlet hoses and secure them with clamps.
5. Refill the coolant.

Coolant Refill-ESS

6. Fit the bottom deflector.

Manual Service Disconnect Remove

7. Fit the manual service disconnect.

Manual Service Disconnect Refit

8. Connect the negative battery cable.

Charging Port

Remove

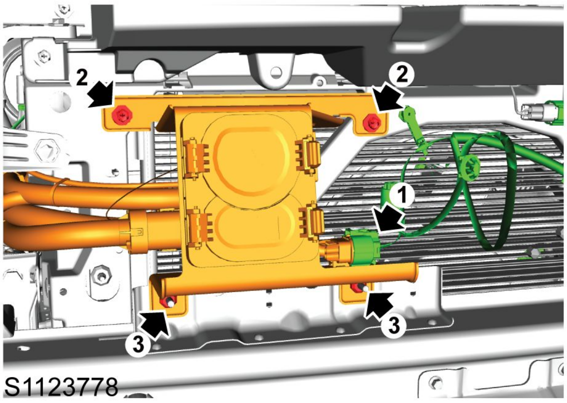
1. Carry out high voltage battery isolation procedure - see Manual Service Disconnect.

Manual Service Disconnect Remove

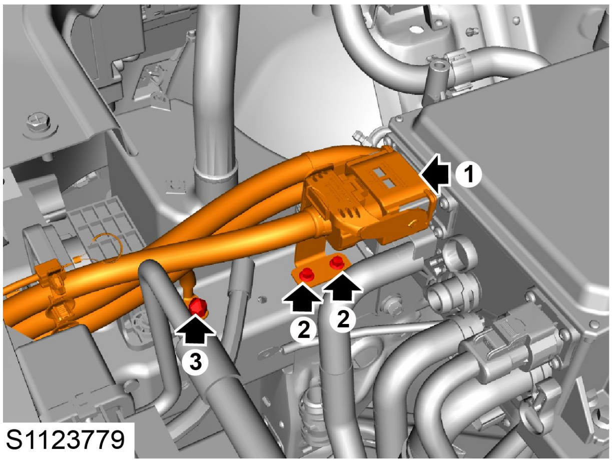
2. Remove the front bumper.

Front Bumper Remove

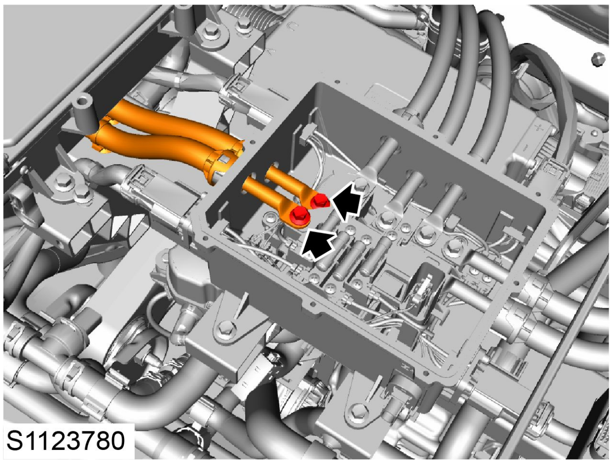
3. Disconnect the low voltage harness connector (1).
4. Remove 2 bolts (2) and 2 nuts (3) fixing the charging port assembly to the body.



5. Disconnect the high voltage harness connector (1) from the charging port to the combined charging unit.
6. Remove 1 nut (3) fixing the charging port grounding wire to the body.
7. Remove 2 bolts (2) fixing the harness bracket to the front right longitudinal beam.



8. Remove 8 bolts fixing the upper PDU cover to the PDU assembly, and remove the upper PDU cover.
9. Remove 2 bolts fixing the charging port harness in the PDU, and pull the charging port harness out of the PDU.



10. Loosen the harness clips and remove the charging port assembly.

Refit

1. Arrange the charging port harness in the front compartment, and secure it with clips.
2. Fix the charging port harness in the PDU, fit 2 bolts, tighten them to **13–17Nm**, check the torque.
3. Fix the upper PDU cover to the PDU assembly, fit 8 bolts, tighten them to **5–7Nm**, check the torque.
4. Fix the charging port grounding wire to the body, fit 1 nut, tighten it to **7–10Nm**, check the torque.
5. Fit 2 bolts fixing the harness bracket to the front right longitudinal beam, tighten them to 7–10Nm, check the torque.
6. Connect the high voltage harness connector to the combined charging unit.
7. Fix the charging port assembly to the body, fit 2 bolts and nuts, tighten them to **7–10Nm**, and check the torque.
8. Connect the low voltage harness connector to charging port.
9. Fit the front bumper.

Front Bumper Refit

10. Fit the manual service disconnect.

Manual Service Disconnect Refit

11. Connect the negative battery cable.

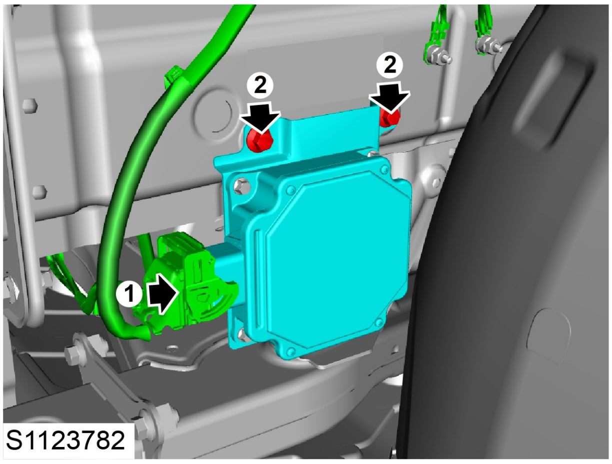
Electric Vehicle Communication Controller (EVCC)

Remove

1. Disconnect the negative battery cable.
2. Remove the front bumper.

☞**Front Bumper Remove**

3. Disconnect the harness connector (1).
4. Remove 2 bolts (2) fixing the communication controller assembly to the front left longitudinal beam, and remove the communication controller assembly.

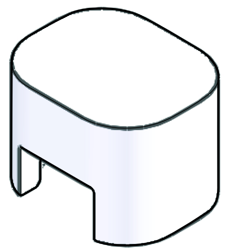
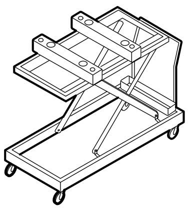


Refit

1. Fix the communication controller to the front left longitudinal beam, fit 2 bolts, tighten them to **7–10Nm**, check the torque.
2. Connect the harness connector of the communication controller.
3. Connect the negative battery cable.
4. Programme and encode the electric vehicle communication controller. Refer to Service Programming & Configuration Self-learning Manual, EVCC section.
5. Fit the front bumper.

☞**Front Bumper Refit**

Special Tools

Tool Number	Description	Picture
TEL00052	Cover,MSD Connector	 TEL00052
TEL00050	Trolley,ess	 TEL00050

HV Battery Pack Subsystem

Specifications

Torque

Description	Value
Bolt-EDM Module to End Plate of Tray	5–7Nm
Bolt-Upper Cover to Tray	6–7Nm
Nut-Upper Cover to Tray	55–65Nm
Bolt-BMS Module to BMS Module Bracket	5–7Nm
Bolt-BMS Module Bracket to Tray	7.5–9.5Nm
Bolt-BMS Module Bracket to Tray	11–13Nm
Bolt-Bus-bar Bracket to Tray	5.5–7.5Nm
Bolt-Bus-bar to Battery Module	7.5–9.5Nm
Nut-Bus-bar to EDM Module	7.5–9.5Nm
Bolt-CMU Module to Battery Module	5.5–7.5Nm
Bolt-Battery Module to Tray	11–13Nm
Bolt-EDM Module to Tray	5–7Nm
Bolt-Water Pipe Bracket to Tray	5.5–7.5Nm
Bolt-GND Harness to Tray	7.5–9.5Nm
Nut-Energy storage system grounding to body	7–10Nm
Bolt-Deflector to Tray	9–12Nm
Bolt-Explosion Proof Valve to Tray	5.5–7.5Nm
Bolt-Pressure Switch to Tray	5.5–7.5Nm
Bolt-Plate to Tray	5–6Nm

Service Procedures

Precautions for High Voltage System Disassembly

Basic Requirements

Basic requirements for related precautions for high voltage in vehicle are as follows:

- ALWAYS ensure the correct PPE is worn when working on, or with HV components.
- Unrelated and non qualified persons must be prevented from coming into contact with the vehicle during repair.
- DO NOT touch any components that carry the high voltage warning labels without the correct PPE or training.
- If it is necessary to disassemble the relevant high-voltage components, any personnel must have the correct high voltage training and qualifications.
- When operating high-voltage components, the operator must wear protective equipment and must also use insulated gloves.
- When operating exposed high-voltage system components, the operator must use a multimeter to measure if there is high voltage, no operations should be undertaken until the vehicle is made, and proven to be safe and not subject to high voltage.
- Before carrying out any work on vehicles featuring high voltage systems you must switch off the vehicle power system/START/STOP Switch. If there is a need to disassemble the high-voltage system, wait for 5 minutes before proceeding.
- When disassembling or assembling electrical components, the 12V power supply and the manual service switch on the high-voltage battery pack must be disconnected.
- After any removal and refitting of any high voltage components it is necessary to ensure correct installation and connection of all high-voltage components and ensure their reliability before reconnecting the high-voltage power.
- All high-voltage components MUST have a robust and secure ground connection.

Warning: Only persons that hold the correct high voltage training certificates and qualifications are allowed to work on high voltage systems and components.

Warning: Non qualified staff are NOT permitted to dismantle high voltage systems or components (including, ESS, Electric Drive Transmission, PEB, PDU, EACP, PTC units, HV harnesses, CCU, DCDC, Charging sockets etc).

Warning: Prior to opening any high voltage circuits the systems MUST be checked using a suitable multi meter to ensure they carry no high voltage current. Where there is need to work with the high voltage system is essential that the correct 'make safe' procedure is followed - see Manual Service Disconnect procedure in the Service Repair manual. After disconnecting the Manual Service Disconnect (MSD), always wait 5 minutes prior to commencing any checks for residual voltage etc.

Caution: When removing or servicing any parts of the high voltage system it is essential that no liquids enter, contaminate or are spilled on components, harnesses or connectors.

General Description

General

This Service Manual is intended for use by professionals and qualified technicians. Without proper training or without suitable tools, injuries may be caused during repair. At the same time, it may cause damage to the battery pack or cause the battery pack to malfunction.

The high-voltage battery pack powers the vehicle. The high-voltage battery pack management system is designed to detect and adjust cell voltage, current and temperature to ensure safe operation of the battery and maximum battery life.

The battery pack is consisted of 6 battery modules. Each of them are equipped with CMU for managing cell balancing, voltage, temperature and charging.

Safety Information

You must read "Safety Information" section before repairing the battery pack. In order to reduce the risk of injury, you must pay attention to the danger reminder, warning reminder and caution reminder in the manual before repair. Safety information includes both personal protective equipment (PPE) requirements and work area requirements.

This manual contains various “Danger”, “Warning” and “Caution” reminders. You must be aware of such reminders to reduce the risk of personal injuries or even death caused by battery pack repair.

This manual is intended for use by trained personnel. Without proper training or without suitable equipment and tools, personal injuries may be caused to you and others

The “Danger”, “Warning” and “Caution” reminders are not exhaustive, and the potential risks of failure to follow the instructions in this manual may not be warned.

Battery pack high voltage danger: The maximum voltage of the battery pack can reach about 417V (battery pack type 1) or 438V (battery pack type 2). To avoid severe personal injury, a buffer zone must be set before repair.

PPE danger: The high-voltage battery pack includes a variety of high voltage components. High voltage insulated gloves and face masks must be worn when performing any repairs, otherwise severe personal injury or even death may be caused.

Battery pack reconnection danger: Reconnecting the battery pack may result in systems receiving full battery voltage. A warning must be given when reconnecting the battery pack, otherwise severe personal injury or even death may be caused.

Battery pack voltage danger: The battery high voltage must be isolated before performing any movement and installation procedures on the battery pack high-voltage system, otherwise severe personal injury or even death may be caused.

Battery pack voltage potential hazard danger: The battery pack may be fully charged before high voltage disassembling. A warning must be given when reconnecting the battery pack, otherwise severe personal injury or even death may be caused.

Manual service switch hazard danger: PPE must be worn before removing the manual service switch. This will prevent potential hazards that could result in severe personal injury or even death.

Maintenance area hazards: Before repairing the battery pack, the maintenance area must be set up, otherwise severe personal injury or even death may be caused.

Manual service switch warning: To avoid unintentional fitting and the risk of electric shock, the manual service switch must be stored in a safe place, otherwise severe personal injury or even death may be caused.

Fasteners caution: If improper fasteners are used, the battery pack may be damaged; all used high voltage fasteners and module pack fasteners must be replaced. Be sure to use the correct part number, failure to follow the instructions may cause damage to the battery pack.

Battery pack lifting caution: The weight of the battery pack must be evenly distributed on the length of the battery jack. The battery pack upper cover must be fitted before lifting the battery pack. Failure to follow the instructions may cause damage to the battery pack.

Electrostatic discharge caution: Electrostatic discharge can damage components, therefore, great care will be required when handling all electronic components. Personal electrostatic discharge must be performed before repairing all electronic components. Failure to follow the instructions may cause damage to the battery pack.

Personal Protective Equipment (PPE)

PPE is used to protect the safety and health of the operator.

PPE includes insulated gloves (higher than 1000 volts), insulated shoes (higher than 1000 volts), face masks or safety goggles.

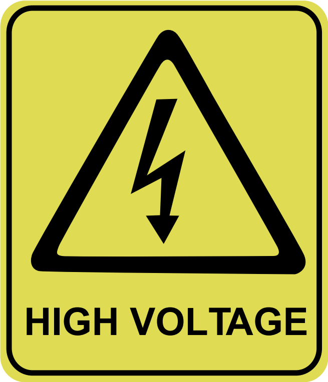
Before commencing any work, check that all PPE is fitted and worn correctly; do not use PPE that has been damaged, and perform the following checks before and after use:

- Check PPE for aging and damage
- Check insulated rubber gloves for scratches, holes and tears
- Check insulated safety shoes for holes, damage, nails, metal parts, wear, or other problems.

Safe Work Area

It is very important to provide a safe and effective controlled work area when disassembling and repairing the battery pack.

- The work area must be indoors and protected against rain, snow, sand and other substances.
- The work area should be separated from other areas to avoid contamination, such as metal powder, oil or other substances. If necessary, use a plastic curtain to cover the work area.
- The work area should be approximately the size of a car to ensure efficient work.
- The floor of the work area must be kept dry and ventilated and free from rain or snow.
- The work area should be set up with relevant warning signs. DO NOT enter the work area without permission.



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High Voltage Insulation Test

Test Procedure

1. Before and after the repair work, the high voltage insulation test should be conducted.
2. Move the high-voltage battery pack to the work area.
3. Remove the upper cover.

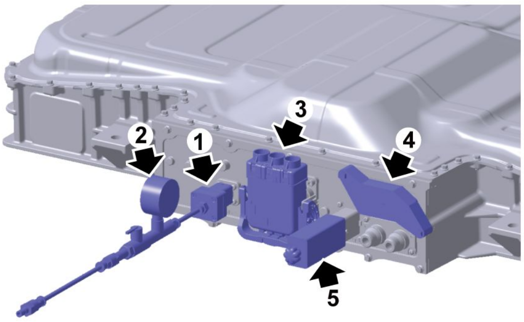
☞ **Upper Cover Remove**

4. Remove insulation cotton if needed.
5. Disconnect the HV sampling harness connectors from the EDM module to BMS module.
6. Remove the positive and negative pole cover from EDM module.
7. Connect the positive terminal of the test equipment to one pole of the EDM module and connect the negative terminal to the tray of high voltage battery pack. Conduct the insulation test, set the insulation meter at 500V, the insulation resistance value should be greater than or equal to 100MΩ.
8. Repeat the above process again using another pole of the EDM.

Battery Pack Integrity Tests

Airtight Integrity Test Procedure

1. After any maintenance that has required the battery pack to be opened it is imperative that an airtight integrity test is carried out.
2. Move the high-voltage battery pack to the work area.
3. Fit special tool **TEL00064** to low voltage connector socket (5).
4. Fit special tool **TEL00091** to main HV connector socket (3).
5. Fit special tool **TEL00092** against the vent value. Fit 2 bolts provided in the tool and tighten to **5–7Nm**, check the torque (4).
6. Connect the barometer of **TEL00036** (2) to the air pipe on **TEL00063** (1), and connect the other end of barometer to another air pipe of special tool **TEL00063**
7. Fit special tool **TEL00063** to MSD socket.



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8. Use 4 heavy objects (each object is less than 10 kg) which have a flat contact surface and put them on the upper cover of the battery pack.
9. Start the sealing test, release the compressed air into the battery pack through the special tool **TEL00063** slowly until the air pressure reaches 4.6kPa, turn off the valve on the barometer when the pressure value is stable, monitor the gauge for 5 minutes to make sure the pressure drop is no more than 0.25kPa.

Cooling System Integrity Test Procedure

1. After any repair work involving the water pipes or tray of the battery, the sealing test of cooling system need to be conducted.
2. Move the high-voltage battery pack to the work area.
3. Connect special tool **TEL00034** to the water inlet and outlet respectively and fix with clamps.
4. Connect the pump used in special tool **T14001** to one of special tool **TEL00034**.
5. Use the pump to pressurise the pipework to 200kPa, maintain for 4 minutes to make sure the pressure drop

is no more than 0.33kPa.

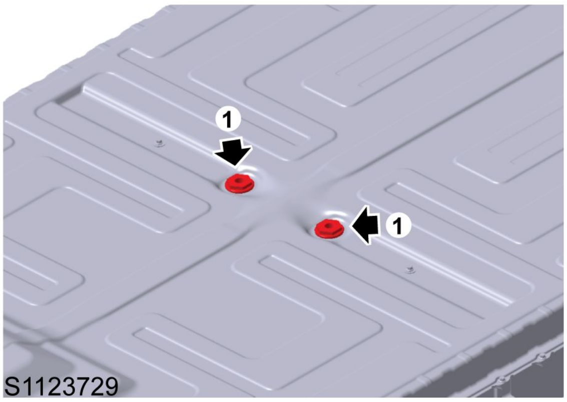
Upper Cover

Remove

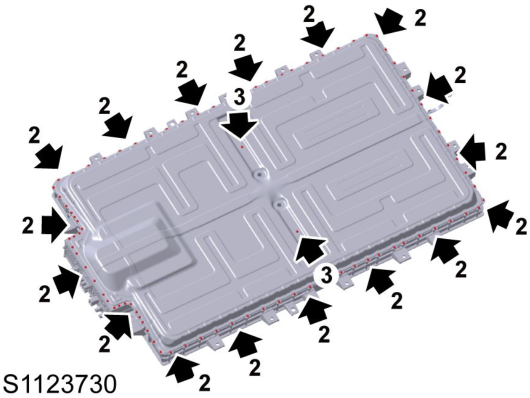
1. Remove the high-voltage battery pack.

High-voltage Battery Pack Remove

2. Move the high-voltage battery pack to the work area.
3. Remove any debris, dirt or stains from the surface of high-voltage battery pack with a dry soft cloth.
4. Remove 2 hanging point nuts (1) fixing the high-voltage battery pack upper cover to the tray.



5. Remove 2 bolts and gaskets (3) fixing the high-voltage battery pack upper cover to the tray.
6. Remove 83 bolts (2) fixing the high-voltage battery pack upper cover to the tray.



7. Remove the upper cover and scrap 4 seal rings located in 2 hanging points and both sides of the hanging points.
8. Conduct the high voltage insulation test. If the test result is in spec, move to the next step. If the test result is out of the spec, start the troubleshooting process with the DTC manual.

High Voltage Insulation Test

Refit

1. Clean the mating surface of high-voltage battery pack tray and upper cover.
2. Check the seal ring on the upper cover for damage. If necessary use 3M SZ1000 sealant to repair the damaged part. The recommended ambient temperature for repair is 10℃ – 25℃.

a. Material and tool: 3M SZ1000, two-component foam sealant, pneumatic dispenser (recommended model is DP400-85-01), static mixing pipe (more than 18 sections recommended), PET release film.

b. Depending on the size of the repair area, cut the head of the rubber mixing tube in steps to the appropriate diameter.

c. Install the two-component sealant and mixing pipe. Connect the pneumatic dispenser to a source of compressed air.

d. Before the formal repair, test the mixing status of the foam until it is uniform.

e. Apply the foam into the area to be repaired.

f. Place PET release film over the foam, making sure that the strippable surface is facing the foam. Due to the high viscosity of the adhesive, in order to ensure the seamless bonding between the new foam and the originals, a certain pressure can be applied to the new foam through PET release film.

g. Peel the PET release film from the new foam until the surface of the new foam is dry (at 23℃ - 25℃, about 10 - 15 minutes).

h. Wait for the new foam to cure completely and repair is completed.

Note: The height of the foam strip where repaired may be higher than originals due to the expansion of the foam. This should not affect the overall sealing performance. If it is necessary to obtain a repair surface with a gentle transition to the originals, a small amount of layered filling is recommended.

3. Fit 4 new seal rings to the hanging point and the mounting points on both sides.
4. Fit the upper cover. Fit 83 bolts, tighten to **6–7Nm** and check the torque.
5. Fit 2 bolts and gaskets, tighten to **6–7Nm** and check the torque.
6. Fit 2 hanging point nuts, tighten to **55–65Nm** and check the torque.
7. Conduct an airtight integrity test.

☞**Airtight Integrity Test**

8. Refit the high-voltage battery pack.

☞**High-voltage Battery Pack Refit**

Insulation Cotton - 50.3kWh

Remove

1. Remove the high-voltage battery pack.

☞**High-voltage Battery Pack Remove**

2. Move the high-voltage battery pack to the work area.
3. Remove the upper cover.

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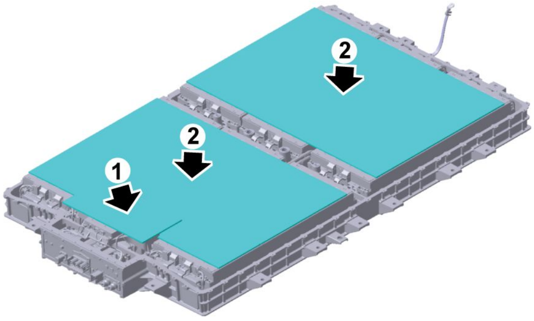
4. Remove the insulation cotton (1) on the BMS module and insulation cottons (2) on battery module.



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Refit

1. Refit the insulation cotton on the BMS module or battery modules.
2. Refit upper cover.

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3. Refit the high-voltage battery pack.

☞**High-voltage Battery Pack Refit**

Flame Trap - 69.9kWh

Remove

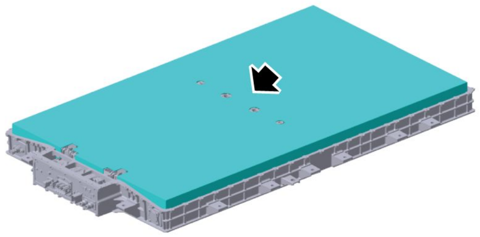
1. Remove the high-voltage battery pack.

☞**High-voltage Battery Pack Remove**

2. Move the high-voltage battery pack to the work area.
3. Remove the BMS module bracket.

☞**BMS Module Bracket Remove**

4. Remove the flame trap upon the battery modules.



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Refit

1. Refit the flame trap upon the battery modules.
2. Refit the BMS module bracket.

☞**BMS Module Bracket Refit**

3. Refit the high-voltage battery pack.

☞**High-voltage Battery Pack Refit**

BMS Module

Remove

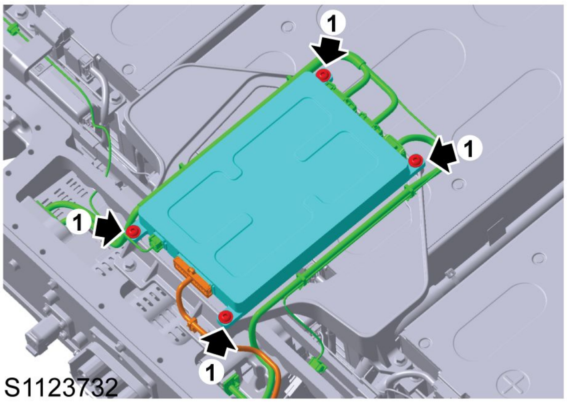
1. Remove the high-voltage battery pack.

☞**High-voltage Battery Pack Remove**

2. Move the high-voltage battery pack to the work area.
3. Remove the upper cover.

☞**Upper Cover Remove**

4. Remove the insulation cotton.
5. Disconnect the connectors from BMS module.
6. Remove 4 bolts (1) fixing BMS module to BMS module bracket.



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7. Remove BMS module. Place the BMS module in antistatic plastic bag after removal from pack to prevent electrostatic breakdown.

Refit

1. Refit the BMS module to BMS module bracket.
2. Refit 4 bolts, tighten to **5–7Nm** and check the torque.
3. Connect the connectors to BMS module.
4. Refit the insulation cotton upon the BMS module.
5. Refit upper cover.

☞**Upper Cover Refit**

6. Refit the high-voltage battery pack.

☞**High-voltage Battery Pack Refit**

7. Programme and encode the BMS module, refer to the "Service Programming & Configuration Self-learning Manual" - "Battery Management System (BMS)".

BMS Module Bracket

Remove

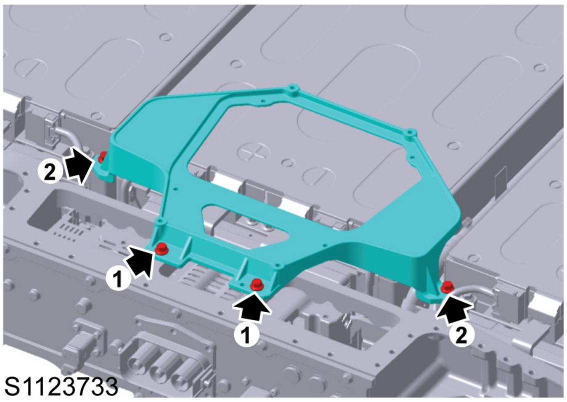
1. Remove the high-voltage battery pack.

☞**High-voltage Battery Pack Remove**

2. Move the high-voltage battery pack to the work area.
3. Remove BMS module.

☞**BMS Module Remove**

4. Remove the harness clips fixing on BMS module bracket.
5. Remove 2 bolts (1) fixing BMS module bracket to the tray. Remove 2 bolts (2) fixing BMS module bracket to the tray and scrap.



6. Remove BMS module bracket.

Refit

1. Refit the BMS module bracket to the tray.
2. Refit 2 bolts to fix the bracket, tighten to **7.5–9.5Nm** and check the torque.
3. Refit 2 new bolts to fix the bracket, tighten to **11–13Nm** and check the torque.
4. Refit the harness clips.
5. Refit BMS module.

☞**Refit BMS Module**

6. Refit the high-voltage battery pack.

☞**High-voltage Battery Pack Refit**

Wire Harness

Remove

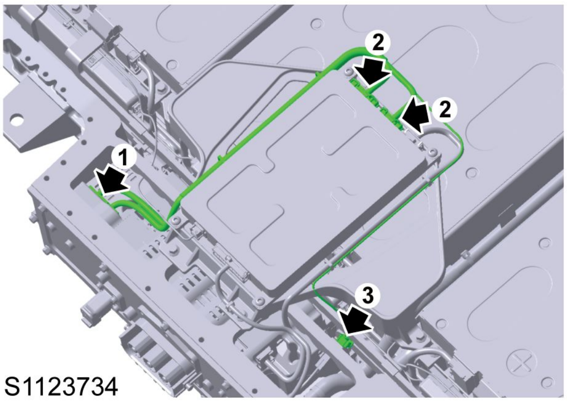
1. Remove the high-voltage battery pack.

☞**High-voltage Battery Pack Remove**

2. Move the high-voltage battery pack to the work area.
3. Remove insulation cotton and flame trap.

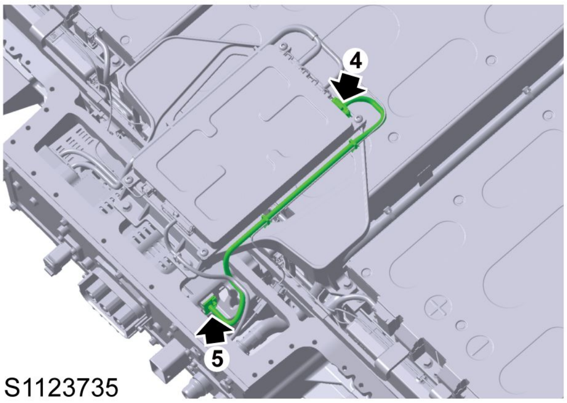
☞**Flame Trap Remove**

4. Main low voltage harness remove.
   a. Disconnect the connector (1) to EDM module, connectors (2) to BMS module and connector (3) to temperature sensor.



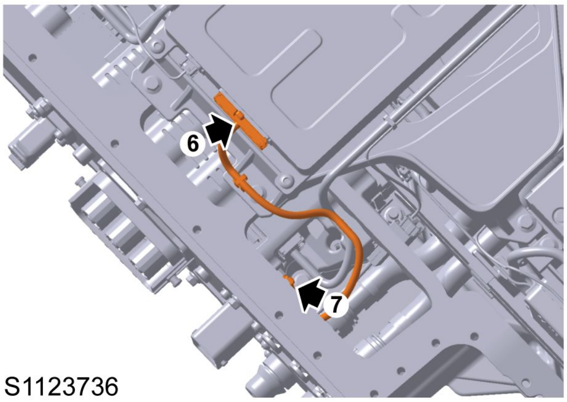
   b. Disconnect the clips on the BMS module bracket. Remove the main low voltage harness.

5. Relay power harness remove.
   a. Disconnect the connector (4) to BMS module and connector (5) to EDM module.



   b. Disconnect the clips on the BMS module bracket. Remove the relay power harness.

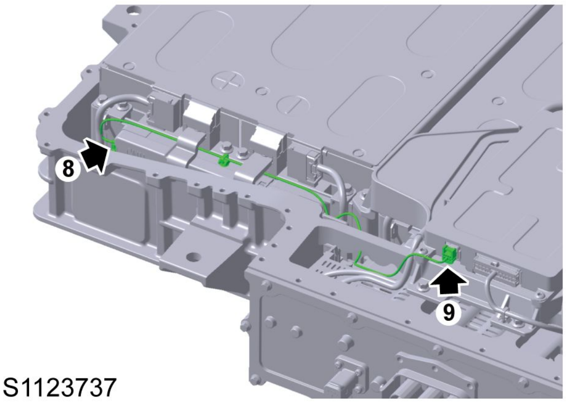
6. High voltage sampling harness remove.
   a. Disconnect the connector (6) to BMS module and connector (7) to EDM module.



b. Disconnect the clips on the BMS module bracket. Remove the high voltage sampling harness.

7. Communication harness remove 1.

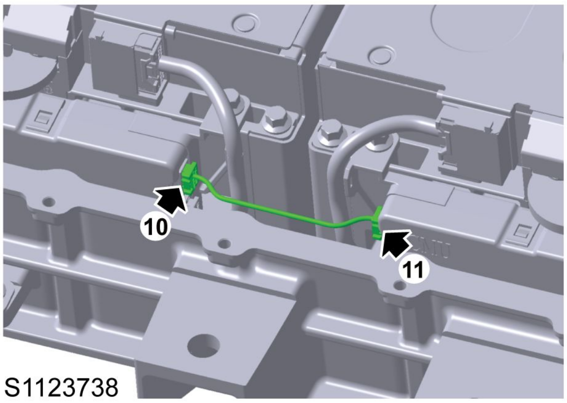
   a. Disconnect the connector (8) to CMU module and connector (9) to BMS module.



   b. Disconnect the clips on the BMS module bracket. Remove the communication harness.

8. Communication harness remove 2.

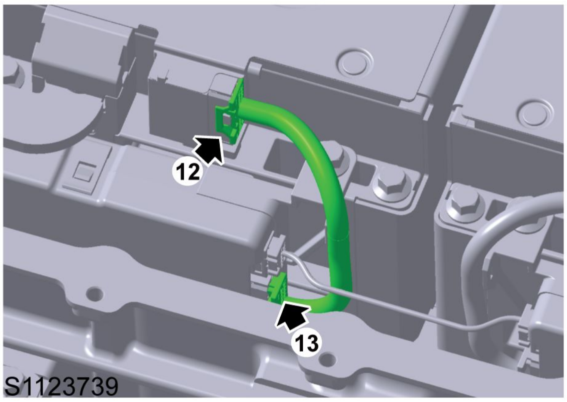
   a. Disconnect the connector (10) to CMU module and connector (11) to another CMU module.



   b. Disconnect the clip or tie on the harness. Remove the communication harness.

9. Module sampling harness remove.

   a. Disconnect the connector (12) to battery module and connector (13) to CMU module .



   b. Disconnect the clip or tie on the harness. Remove the module sampling harness.

Refit

1. Module sampling harness refit.
   a. Connect the connectors at harness end to the CMU module and battery module.
   b. Use a new harness clip and secure the harness.
2. Communication harness refit 1.
   a. Connect the connectors at harness end to the BMS module and CMU module.
   b. Use a new harness clip or tie and secure the harness.
3. Communication harness refit 2.
   a. Connect the connectors at harness end to the both CMU modules.
   b. Use a new harness clip or tie and secure the harness.
4. High voltage sampling harness refit.
   a. Connect the connectors at harness end to the BMS module and EDM module.
   b. Use a new harness clip and secure the harness.
5. Relay power harness refit.
   a. Connect the connectors at harness end to the BMS module and EDM module.
   b. Use a new harness clip and secure the harness.
6. Main low voltage harness refit.
   a. Connect the connectors at harness end to the BMS module, EDM module and temperature sensor.
   b. Use a new harness clip and secure the harness.
7. Refit flame trap and insulation cotton.

☞**Flame Trap Refit**

8. Refit the high-voltage battery pack.

☞**High-voltage Battery Pack Refit**

Bus-bar

Remove

1. Remove the high-voltage battery pack.

☞**High-voltage Battery Pack Remove**

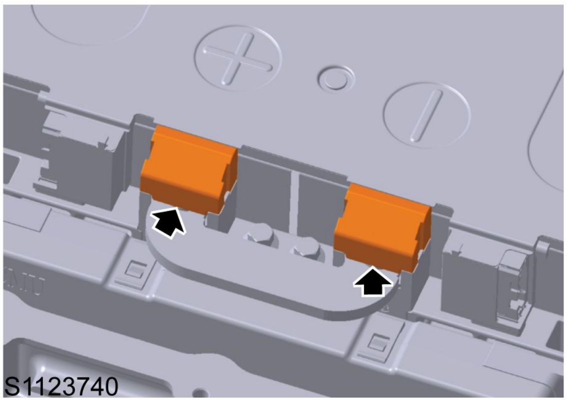
2. Move the high-voltage battery pack to the work area.
3. Remove the all wire harnesses.

☞**Wire Harness Remove**

4. If the bus-bar is under BMS module bracket, remove the BMS module bracket first.

☞**BMS Module Bracket Remove**

5. Remove the cover on the mounting pole of the bus-bar.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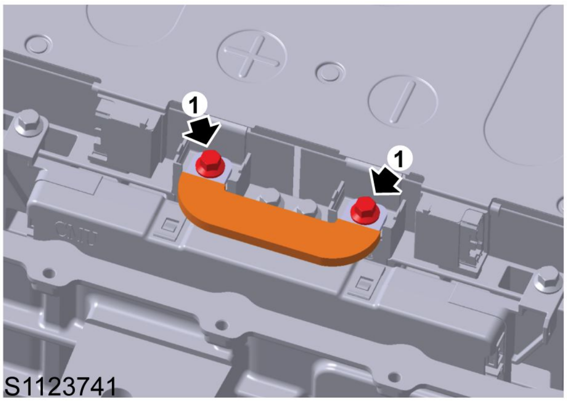
6. Bus-bar remove-battery module.
   a. Remove 2 bolts (1) fixing the bus-bar to battery module.



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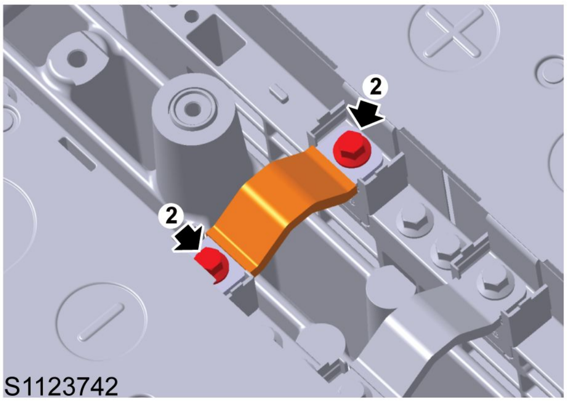
   b. Remove bus-bar.
7. Bus-bar remove-module to module of battery.
   a. Remove 2 bolts (2) fixing the bus-bar to battery modules.



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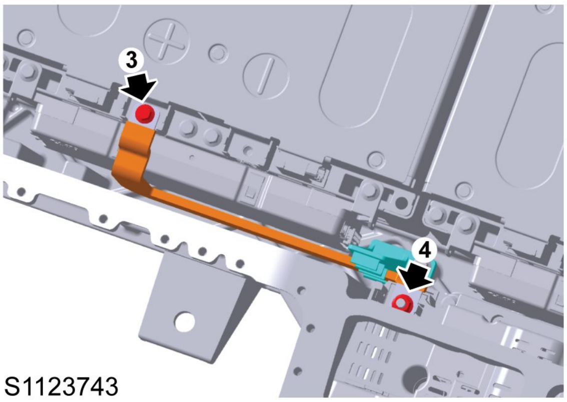
   b. Remove bus-bar.
8. Bus-bar remove-battery module to EDM module.
   a. Remove 1 bolt (3) fixing the bus-bar to battery module and 1 nut (4) fixing the bus-bar to EDM module.



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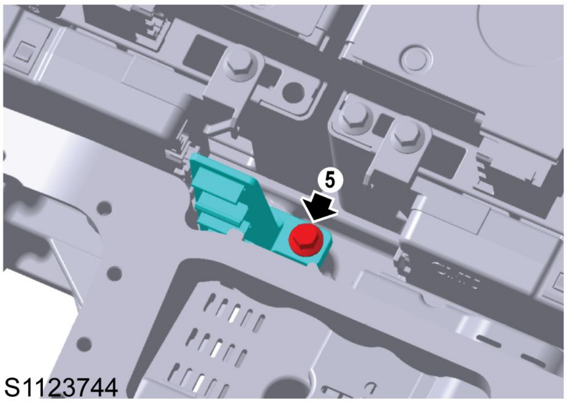
   b. Remove 1 bolt (5) fixing the bus-bar bracket to tray.



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   c. Remove bus-bar and bus-bar bracket assembly. And then remove the bus-bar from bracket.
9. Refit the cover on the pole of the battery module.

Refit

1. Clean up both ends of bus-bar.
2. Remove the cover from pole of battery module.
3. Bus-bar refit-battery module to EDM module.
   a. Refit the bus-bar to bus-bar bracket.
   b. Refit 1 bolt and fixing the bracket on tray, tighten to **5.5–7.5Nm** and check the torque.

   c. Refit 1 bolt and fixing the bus-bar to battery module, tighten to **7.5–9.5Nm** and check the torque.

   d. Refit 1 nut and fixing the bus-bar to EDM module, tighten to **7.5–9.5Nm** and check the torque.

4. Bus-bar refit-module to module of battery.

   a. Refit the bus-bar to battery modules.

   b. Refit 2 bolts and fixing the bus-bar to battery module, tighten to **7.5–9.5Nm** and check the torque.

5. Bus-bar refit- battery module.

   a. Refit the bus-bar to battery module.

   b. Refit 2 bolts and fixing the bus-bar to battery module, tighten to **7.5–9.5Nm** and check the torque.

6. Refit the cover on pole of battery module.
7. If the bus—bar is under BMS module bracket, refit BMS module bracket.

☞**BMS Module Bracket Refit**

8. Refit wire harnesses.

☞**Wire Harness Refit**

9. Refit the high-voltage battery pack.

☞**High-voltage Battery Pack Refit**

CMU Module

Remove

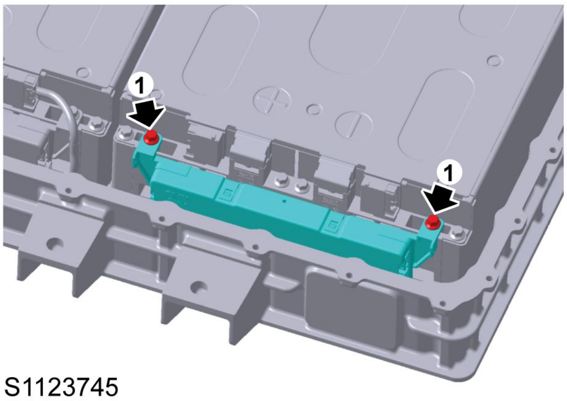
1. Remove the high-voltage battery pack.

☞**High-voltage Battery Pack Remove**

2. Move the high-voltage battery pack to the work area.
3. Remove the bus-bar upon the CMU module.

☞**Bus-bar Remove**

4. Remove 2 bolts (1) fixing CMU module on the battery module.



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5. Remove CMU module.

Refit

1. Refit the CMU module to battery module.
2. Refit 2 bolts, tighten to **5.5–7.5Nm** and check the torque.
3. Refit bus-bar.

☞**Bus-bar Refit**

4. Refit the high-voltage battery pack.

☞**High-voltage Battery Pack Refit**

Battery Module

Remove

1. Remove the high-voltage battery pack.

☞**High-voltage Battery Pack Remove**

2. Move the high-voltage battery pack to the work area.
3. If the module pack is under BMS module bracket, remove BMS module bracket.

☞**BMS Module Bracket Remove**

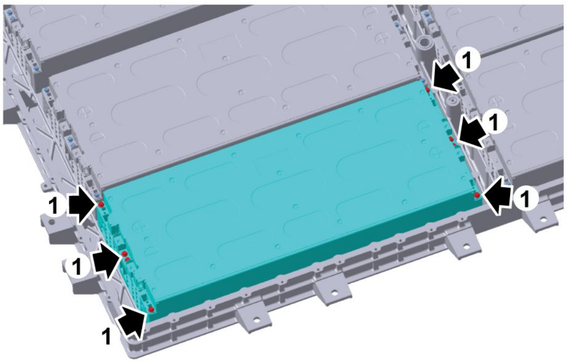
4. Remove the bus-bars from the battery module.

☞**Bus-bar Remove**

5. Remove the CMU module from battery module.

☞**CMU Module Remove**

6. Remove 8 bolts (1) fixing the battery module and discard.



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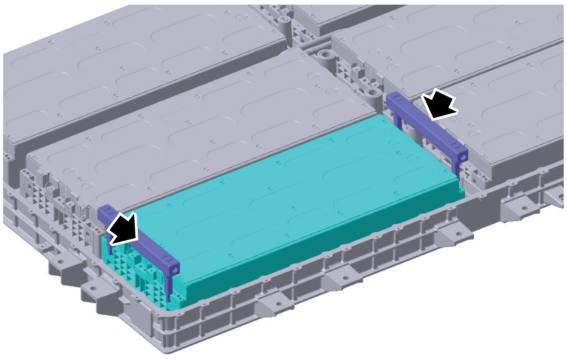
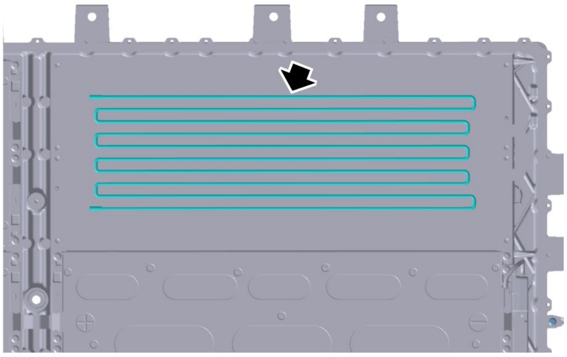
7. Use the hook on the special tool **TEL00093** to hook the hole on the left side of the battery module, use the lifting tool to lift the special tool **TEL00093** slowly. After the module is raised for a certain distance (about 5cm), press the tray down on both sides of the lifting side of the battery module (operated by two people). After one side of the battery module is separated from the tray, remove the lifting tool. And then use special tool **TEL00093** to hook the two sides of the battery module and lift it up (operated by two people), remove the battery module and place it in a safe area.



S1123747

Refit

1. Clean the tray surface and battery module bottom surface.
2. Apply the thermal conductive adhesive evenly on the surface of the tray according to the track shown in the figure below. Recommend to use the pneumatic glue gun with model DP400-85-01.



3. If a new module is to be fitted, it is necessary to charge the new module to the same voltage level of other modules in the battery pack first before refit.
4. Refit the battery module using special tool **TEL00093** to the tray.
5. Refit 8 new bolts, tighten to **11–13Nm** and check the torque.
6. Refit CMU module.

☞**CMU Module Refit**

7. Refit bus-bars to battery module.

☞**Bus-bar Refit**

8. If the battery module is under BMS module bracket, refit BMS module bracket.

☞**BMS Module Bracket Refit**

9. Refit the high-voltage battery pack.

☞**High-voltage Battery Pack Refit**

EDM Module

Remove

1. Remove the high-voltage battery pack.

☞**High-voltage Battery Pack Remove**

2. Move the high-voltage battery pack to the work area.
3. Remove the wire harness between BMS module and EDM module.

☞**Wire Harness Remove**

4. Remove BMS module bracket.

☞**BMS Module Bracket Remove**

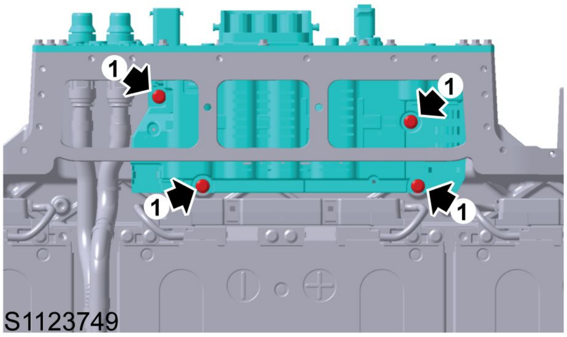
5. Remove the bus-bar between EDM module and battery module.

☞**Bus-bar Remove**

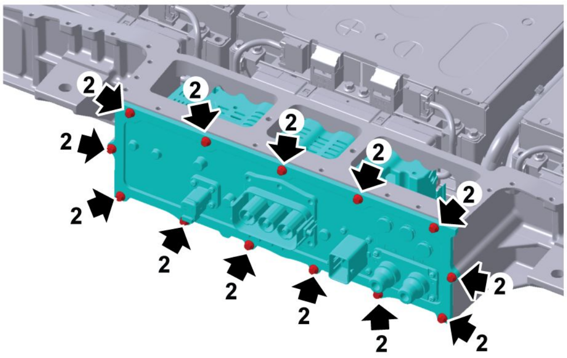
6. Remove temperature sensor.

☞**Temperature Sensor Remove**

7. Disconnect the cooling water pipe from water pipe fitting.
8. Remove 4 bolts (1) fixing the EDM module to the tray.



9. Remove 13 bolts (2) fixing the EDM module to the tray front end.



S1123750

10. Remove the EDM module and scrap the seal ring.

Refit

1. Clean the contact surface of both EDM module and front end of tray.
2. Refit the new seal ring to the contact surface of the EDM module.
3. Refit 3 new vent values if the EDM module is a new one.
4. Refit EDM module in the tray.
5. Refit 13 bolts, tighten to **5–7Nm** and check the torque.
6. Refit 4 bolts, tighten to **5–7Nm** and check the torque.
7. Connect cooling water pipe to water pipe fitting.
8. Refit temperature sensor.

☞**Temperature Sensor Refit**

9. Refit the bus-bar between EDM module and battery module.

☞**Bus-bar Refit**

10. Refit BMS module bracket.

☞**BMS Module Bracket Refit**

11. Refit wire harness between BMS module and EDM module.

☞**Wire Harness Refit**

12. Refit the high-voltage battery pack.

☞**High-voltage Battery Pack Refit**

Vent Value

Remove

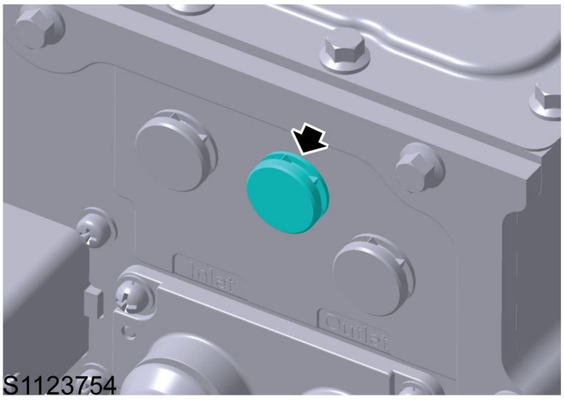
1. Lift the vehicle.

☞**Vehicle Lifting**

2. Remove the bottom deflector.

☞**Bottom Deflector Remove**

3. Clean the vent valve and surrounding area.
4. Remove the vent valve with tool and scrap.



Refit

1. Clean the mounting surface of vent valve on the EDM module.
2. Refit new vent value.
3. Refit bottom deflector.

☞**Bottom Deflector Refit**

4. Lower the vehicle.

Cooling Water Pipe

Remove

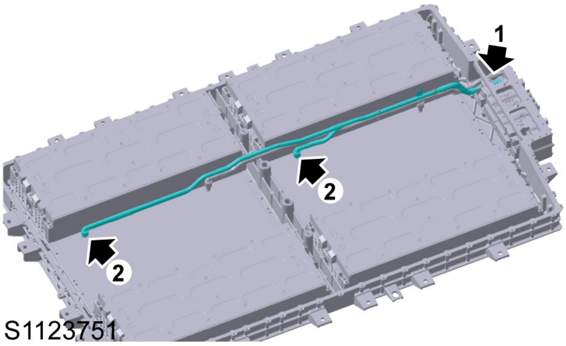
1. Remove the high-voltage battery pack.

☞**High-voltage Battery Pack Remove**

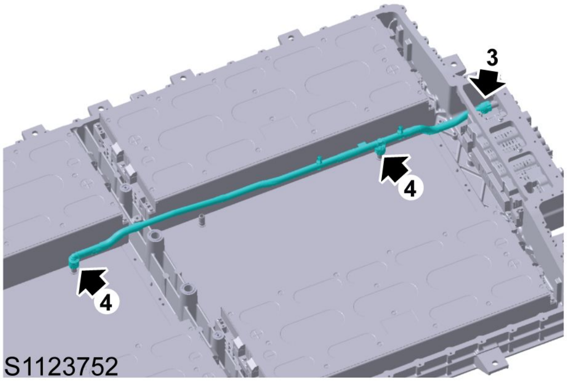
2. Move the high-voltage battery pack to the work area.
3. Drain the coolant from the battery pack. Use compressed air (low pressure) to apply pressure to the cooling pipe from the water inlet to blow out the residual coolant in the pipeline. When there is no coolant discharged from the water outlet, proceed to the next operation.
4. Remove the wire harness fixed on the water pipe.

☞**Wire Harness Remove**

5. Water Inlet Pipe Remove
   a. Disconnect the inlet water pipe from the water pipe connection (1) on the EDM module.
   b. Disconnect the cooling water pipe from cold plate junction (2).



   c. Remove the water inlet pipe from bracket.
6. Water Outlet Pipe Remove
   a. Disconnect the outlet water pipe from the water pipe connection (3) on the EDM module.
   b. Disconnect the cooling water pipe from cold plate junction (4).



   c. Remove the water outlet pipe from bracket.
7. Remove 1 bolt fixing the water pipe bracket to the tray.

Remove the water pipe bracket.

Refit

1. Refit the water pipe bracket to the tray. Refit 1 bolt, tighten to **5.5–7.5Nm** and check the torque.
2. Water outlet pipe refit.
   a. Refit the water outlet pipe to pipe bracket.
   b. Connect the water pipe and cold plate junction and make sure the junction is locked.
   c. Connect the water pipe and water pipe connection on the EDM module and make sure the junction is locked.
3. Water inlet pipe refit.
   a. Refit the water inlet pipe to pipe bracket.
   b. Connect the water pipe and cold plate junction and make sure the junction is locked.
   c. Connect the water pipe and water pipe connection on the EDM module and make sure the junction is locked.
4. Refit the wire harness to the water pipe.

☞**Wire Harness Refit**

5. Conduct the cooling system integrity test.

☞**Cooling System Integrity Test**

6. Refit the high-voltage battery pack.

☞**High-voltage Battery Pack Refit**

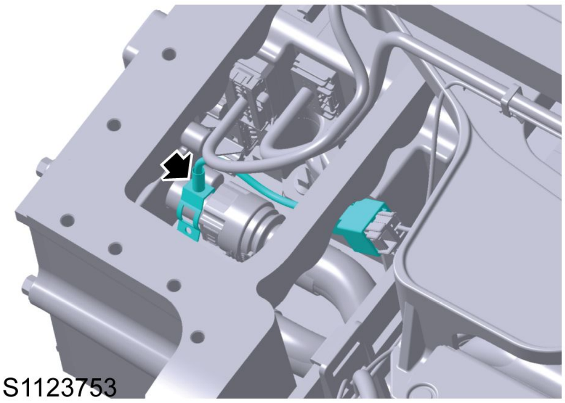
Temperature Sensor

Remove

1. Remove the high-voltage battery pack.

☞**High-voltage Battery Pack Remove**

2. Move the high-voltage battery pack to the work area.
3. Remove the insulation cotton.
4. Disconnect the connector from main low voltage harness.
5. Remove the temperature sensor from water pipe connection.



Refit

1. Refit the temperature sensor to the water pipe connection.
2. Connect the temperature sensor to the main low voltage harness.
3. Refit insulation cotton.
4. Refit the high-voltage battery pack.

☞**High-voltage Battery Pack Refit**

Tray

Remove

1. Remove the high-voltage battery pack.

☞**High-voltage Battery Pack Remove**

2. Move the high-voltage battery pack to the work area.
3. Remove battery module.

☞**Battery Module Remove**

4. Remove temperature sensor.

☞**Temperature Sensor Remove**

5. Remove EDM module.

☞**EDM Module Remove**

6. Remove water pipes.

☞**Water Pipe Remove**

7. Remove baffle.

☞**Baffle Remove**

8. Remove tray of battery pack.

Refit

1. Clean the surface of cold plate.
2. Refit baffle.

☞**Baffle Refit**

3. Refit water pipes.

☞**Water Pipe Refit**

4. Refit EDM module.

☞**EDM Module Refit**

5. Refit temperature sensor.

☞**Temperature Sensor Refit**

6. Refit battery module.

☞**Battery Module Refit**

7. Refit the high-voltage battery pack.

☞**High-voltage Battery Pack Refit**

GND Harness

Remove

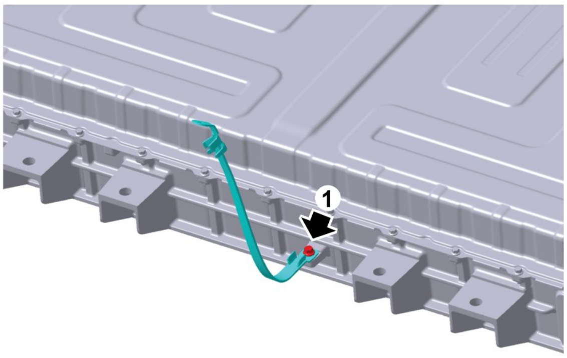
1. Lift the vehicle.

☞**Vehicle Lifting**

2. Remove the bottom deflector.

☞**Bottom Deflector Remove**

3. Remove 1 nut fixing the GND harness to body.
4. Remove 1 bolt (1) fixing the GND harness to battery pack.



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5. Remove GND harness.

Refit

1. Refit the GND harness to battery pack.
2. Refit 1 bolt, tighten to **7.5–9.5Nm** and check the torque.
3. Refit 1 nut, fixing the harness to body, tighten to **7–10Nm** and check the torque.
4. Refit bottom deflector.

☞**Bottom Deflector Refit**

5. Lower the vehicle.

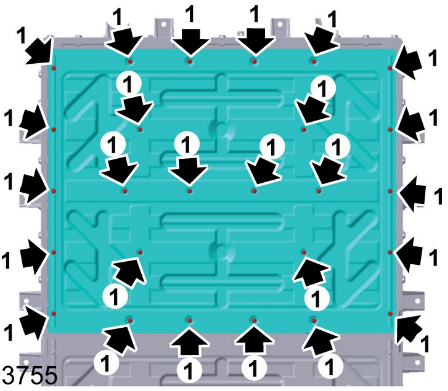
Deflector

Remove

1. Lift the vehicle.

☞**Vehicle Lifting**

2. Remove 26 bolts (1) fixing the bottom deflector to the battery pack.



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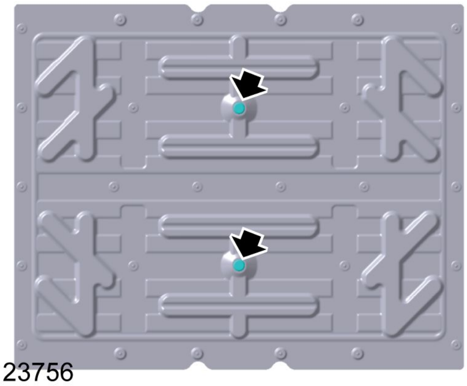
3. Remove the deflector from the high-voltage battery pack.

Refit

1. Clean the bottom surface of high-voltage battery pack.
2. Apply the glue evenly to the specified positions on the deflector (as shown in the figure below).



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3. Refit the deflector to the bottom of battery pack within 10 minutes after applying the glue.
4. Refit 26 bolts, tighten to **9–12Nm** and check the torque.
5. Lower the vehicle.

Explosion Proof Value - 69.9kWh

Remove

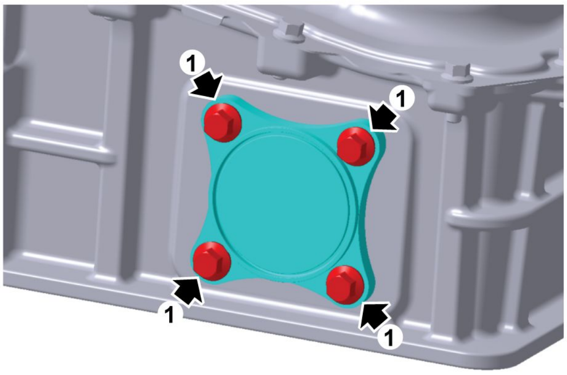
1. Lift the vehicle.

☞**Vehicle Lifting**

2. Remove the bottom deflector if the explosion proof valve is at the back end of the battery.

☞**Bottom Deflector Remove**

3. Clean the explosion proof valve and surrounding area.
4. Remove 4 bolts fixing explosion proof valve to the tray.



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5. Remove the explosion proof valve.

Refit

1. Clean the mounting surface of explosion proof valve on the tray.
2. Refit the explosion proof valve to the tray.
3. Refit 4 bolts, tighten to **5.5–7.5Nm**, check the torque.
4. Refit the bottom deflector if the explosion proof valve is at the back end of the battery.

☞**Bottom Deflector Refit**

5. Lower the vehicle.

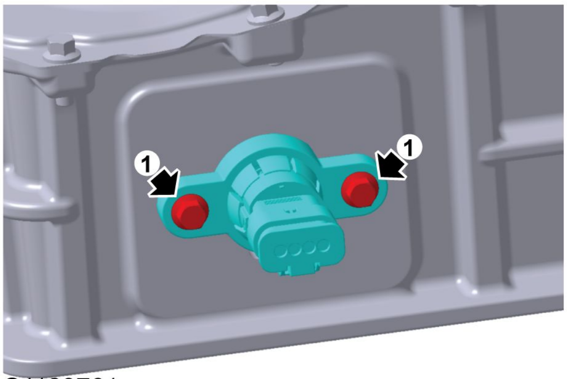
Pressure Switch - 69.9kWh

Remove

1. Lift the vehicle.

☞**Vehicle Lifting**

2. Clean the pressure switch and surrounding area.
3. Remove 2 bolts fixing the pressure switch to the tray.



S1123761

4. Remove the pressure switch.

Refit

1. Clean the mounting surface of pressure switch to the tray.
2. Refit the pressure switch to the tray.
3. Refit 2 bolts, tighten to **5.5–7.5Nm**, check the torque.
4. Lower the vehicle.

Baffle - 69.9kWh

Remove

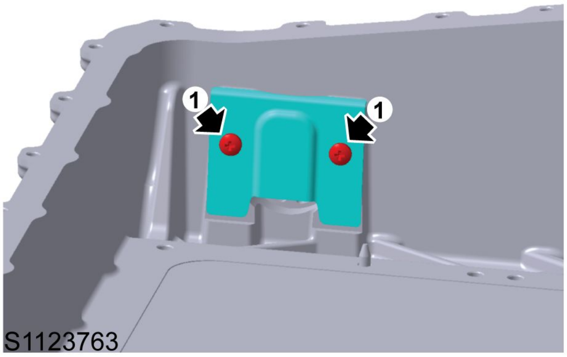
1. Remove the high-voltage battery pack.

☞**High-voltage Battery Pack Remove**

2. Move the high-voltage battery pack to the work area.
3. Remove the battery module beside the baffle.

☞**Battery Module Remove**

4. Remove 2 bolts (1) fixing the baffle to the tray.



S1123763

5. Remove the baffle.

Refit

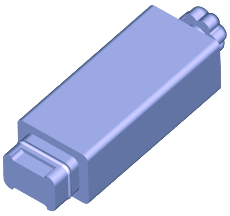
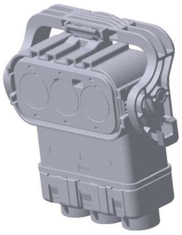
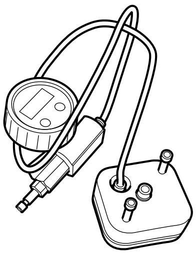
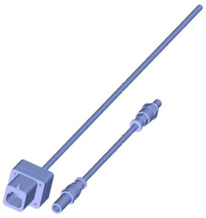
1. Refit the baffle to the tray.
2. Refit 2 bolts, tighten to **5–6Nm**, check the torque.
3. Refit battery module.

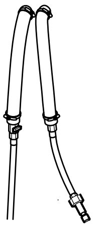
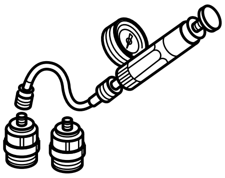
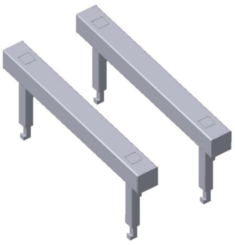
☞**Battery Module Refit**

4. Refit the high-voltage battery pack.

☞**High-voltage Battery Pack Refit**

Special Tools

Tool Number	Description	Picture
TEL00064	Low voltage connector plug 2	 TEL00064
TEL00091	Main high voltage connector 4-3 pin	 TEL00091
TEL00092	Pressure relief valve plug 6	TEL00092
TEL00036	Manual service device plug	 TEL00036
TEL00063	MSD plug-low voltage	 TEL00063

Tool Number	Description	Picture
TEL00034	Cooling system leak test tool	 TEL00034
T14001	Cooling system pressure test kit	 T14001
TEL00093	Battery module extraction tool-3	 TEL00093

Vehicle Control Unit

Specifications

Torque

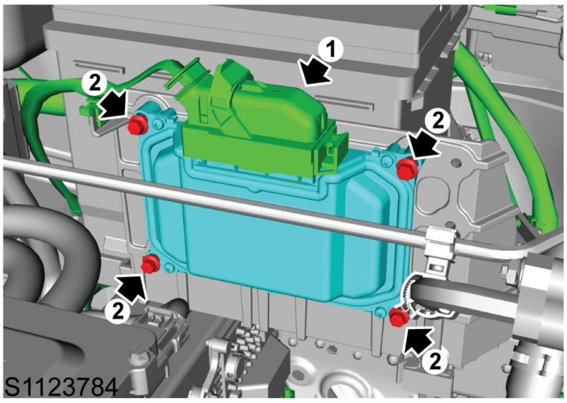
Description	Value
Bolt-VCU to VCU bracket	7–10Nm

Service Procedures

Vehicle Control Unit

Remove

1. Disconnect the negative battery cable.
2. Disconnect the harness connector (1) of the vehicle control unit.
3. Remove 4 bolts (2) fixing the vehicle control unit to the bracket, and remove the vehicle control unit.



Refit

1. Connect the harness connector of the vehicle control unit.
2. Connect the negative battery cable.
3. Program and encode the vehicle control unit (VCU). Refer to Service Programming & Configuration Self-learning Manual, "VCU Replacement".
4. Fix the vehicle control unit to the bracket, fit 4 bolts, tighten them to **7–10Nm**, check the torque.

Shift Lock Control

Specifications

Torque

Description	Value
Bolt-Electronic Shift Gear to Centre Console	3-7Nm

Service Procedures

Electronic Shifter

Remove

1. Remove the centre console upper trim panel.

☞**Centre Console Upper Trim Panel Remove**

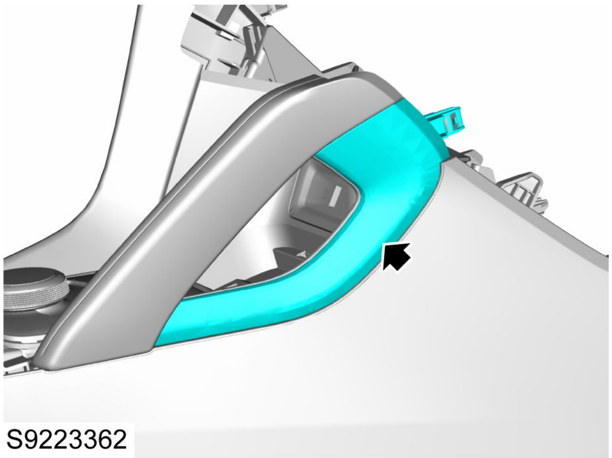
2. Remove the wireless charging module.

☞**Wireless Charging Module Remove**

3. Remove the centre console assembly.

☞**Centre Console Assembly Remove**

4. Remove the right armrest outer trim panel.



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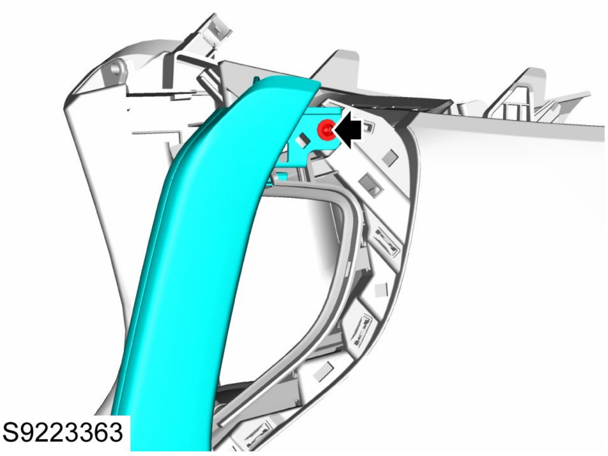
5. Remove 3 screws fixing the right armrest to the center console.



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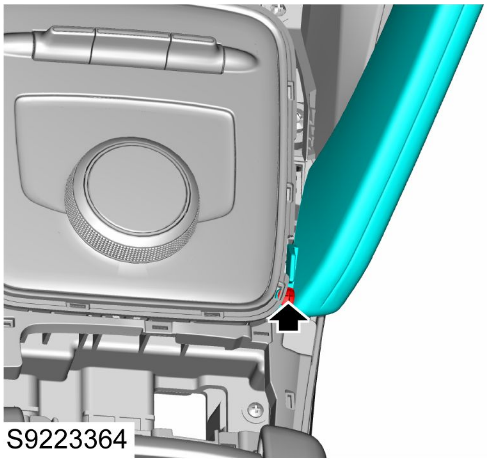

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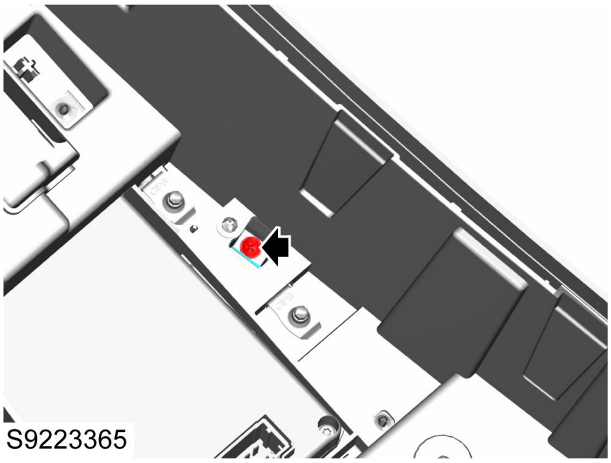

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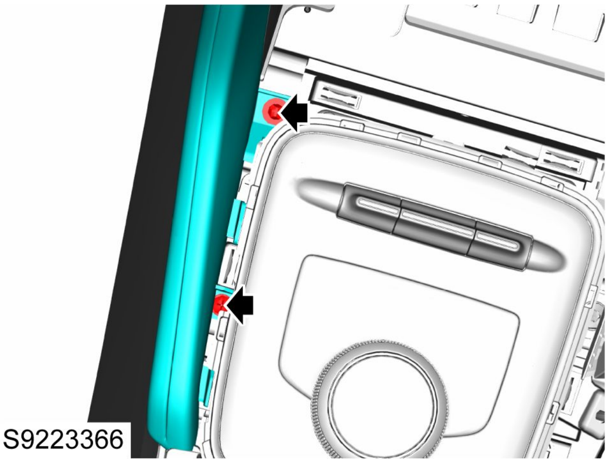
6. Remove 2 screws fixing the left armrest to the center console.



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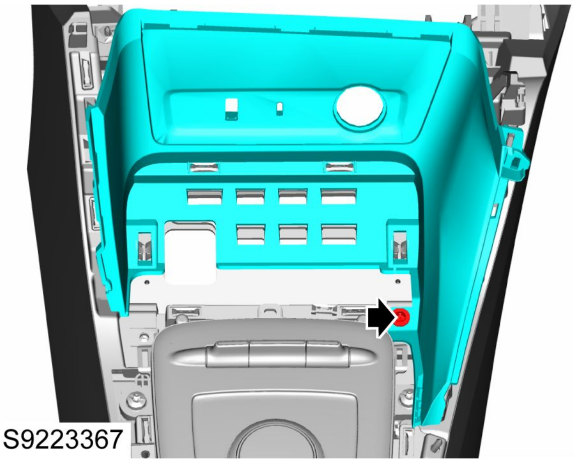
7. Remove 1 screw fixing the front storage box to the center console.



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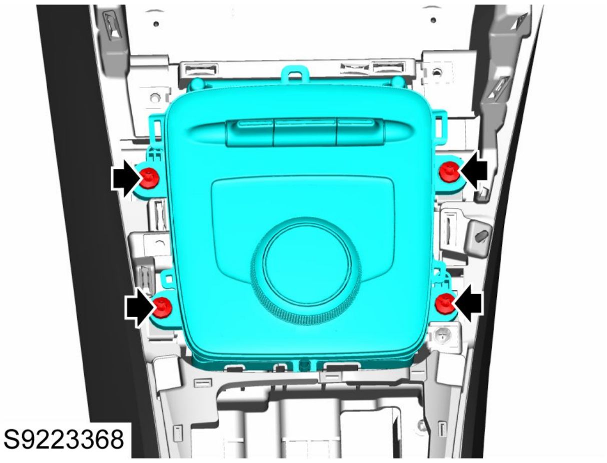
8. Remove 4 screws fixing the electronic shifter to the centre console.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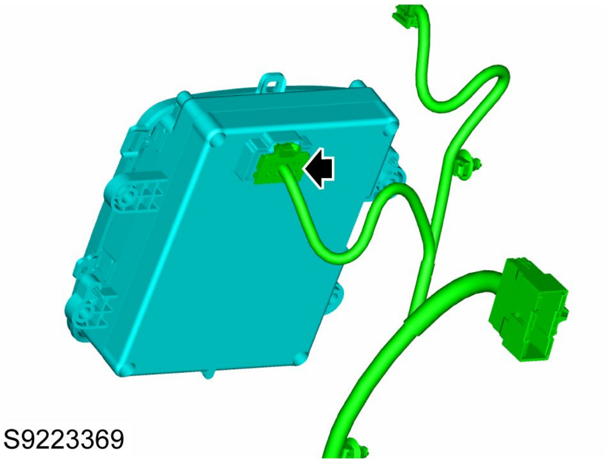
9. Disconnect the harness from the electronic shifter.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Refit

1. Connect the harness to the electronic shifter.
2. Fit 4 screws fixing the electronic shifter to the centre console, tighten them to **3-7Nm**, and check the torque.
3. Tighten 1 screw fixing the front storage box to the center console.
4. Tighten 2 screws fixing the left armrest to the center console.
5. Tighten 3 screws fixing the right armrest to the center console.
6. Fit the right armrest outer trim panel.
7. Fit the centre console assembly.

☞**Centre Console Assembly Refit**

8. Fit the wireless charging module.

☞**Wireless Charging Module Refit**

9. Fit the centre console upper trim panel.

☞**Centre Console Upper Trim Panel Refit**

10. Program and encode the electronic shifter. Refer to Module Self-learning and Programming Manual, “Shifter Control Unit (SCU)”.

Electrical Drive System

Specifications

Torque

Description	Value
Bolt-Drain Plug	25-35Nm
Bolt-Filler Plug	30-40Nm
Bolt-Mount Bracket to Subframe	90-110Nm
Bolt-Rear Mount to EDU	(63-77) Nm+ (85-95) °
Bolt-Transmission Mount to EDU	(63-77) Nm+ (85-95) °
Bolt-Driving Motor Mount to EDU	(63-77) Nm+ (85-95) °
Bolt-Rear Mount to Mount Bracket	(81-99) Nm+ (85-95) °
Bolt-Transmission Mount to Subframe	(81-99) Nm+ (85-95) °
Bolt-Driving Motor Mount to Subframe	(81-99) Nm+ (85-95) °
Bolt-Electric Drive Transmission Upper Insulator to Casing	5-7Nm
Bolt-Bearing Support Plate to Casing	26-34Nm
Bolt-Park Brake Assembly to Casing	50Nm+90°
Bolt-Reducer Casing to Driving Casing	26-34Nm
Screw-Front Bearing Of Intermediate Shaft to Intermediate Shaft	65-75Nm
Bolt-Electrical Park Module to Reducer	7-10Nm
Bolt-Electrical Park Motor Control Unit to Body	7-10Nm

Service Procedures

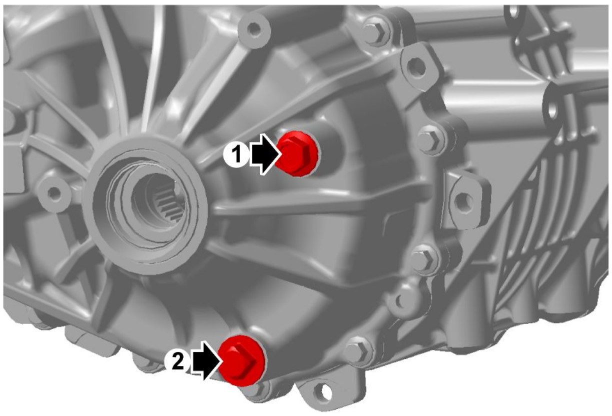
Oil - Drain and Refill

Drain and Refill

1. Raise the vehicle on a lift.
2. Remove the bottom deflector.

Bottom Deflector Remove

3. Place a suitable container under the electric drive transmission.
4. Clean the area around the oil filler plug, remove the oil filler plug and discard the seal gasket (1).
5. Clean the area around the drain plug, remove the drain plug and discard the seal gasket (2).



S1214618

6. Drain the transmission oil.
7. Clean the filler and the drain plug.
8. Place a new seal gasket on the drain plug, fit the drain plug, tighten it to **25-35Nm**, and check the torque.
9. Add transmission oil through the oil filler, the capacity is:

·Drain and Refill	0.8±0.05L
·Fill from Dry State	0.9±0.05L

10. Place a seal gasket on the oil filler plug, fit the oil filler plug, tighten it to **30-40Nm**, and check the torque.
11. Fit the bottom deflector.

Bottom Deflector Refit

12. Lower the vehicle.

Electric Drive Transmission and Suspension

Remove

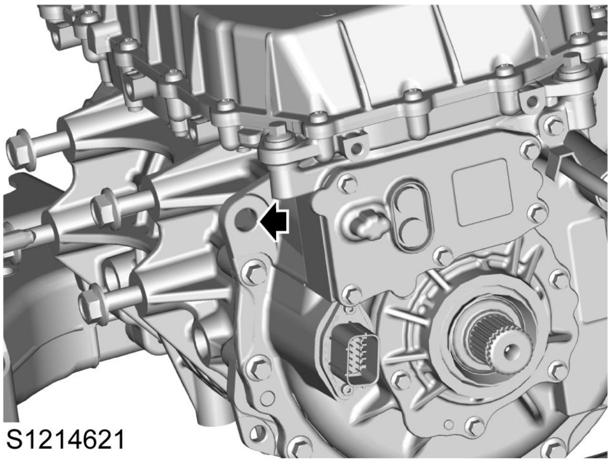
1. Remove the compressor bracket.

Compressor Bracket Remove

2. Remove 2 bolts fixing the electric drive transmission lower insulator to the electric drive transmission, separate the buckles with the upper insulator, and remove the lower insulator.
3. Remove subframe and electric drive transmission.

Subframe Remove

4. Lift the electric drive transmission through the lifting point.



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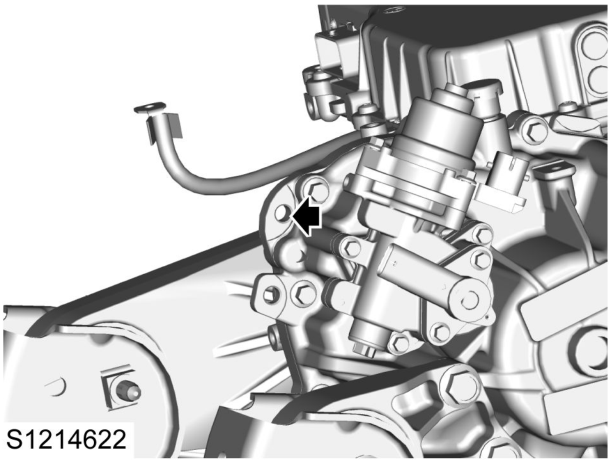

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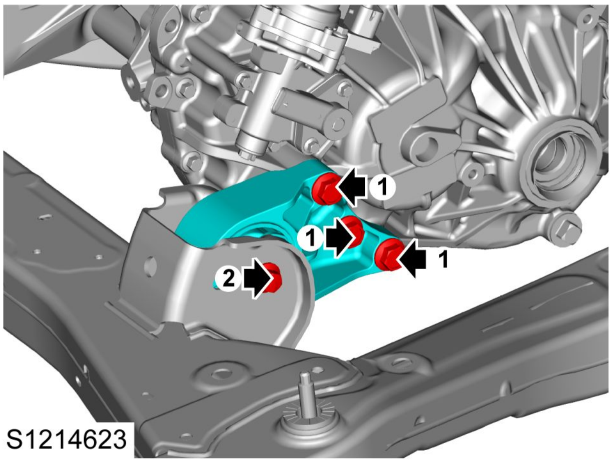
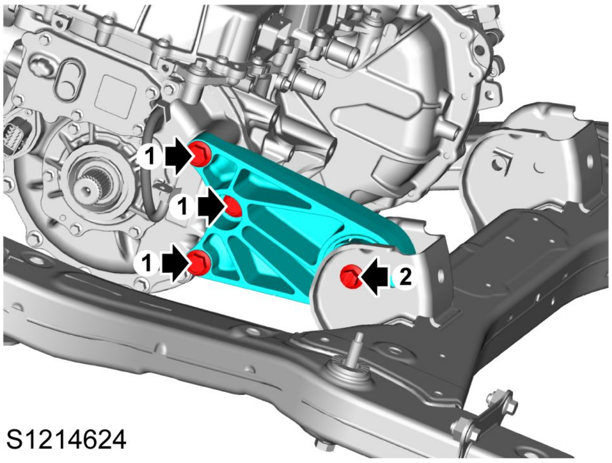
5. Remove and discard 3 bolts (1) fixing the transmission mount to the electric drive transmission.
6. Remove and discard 1 bolt (2) fixing the transmission mount to the subframe.



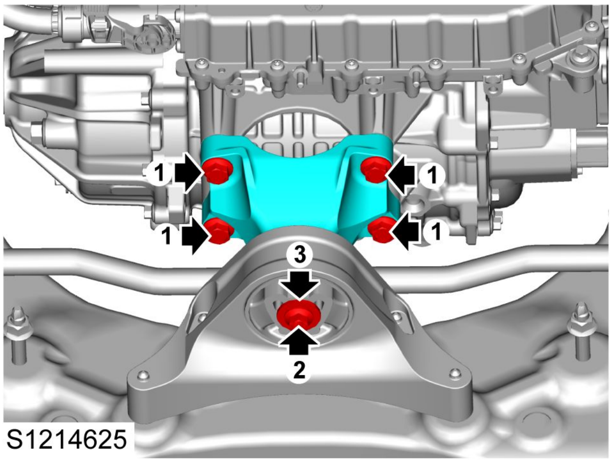
S1214623

7. Remove and discard 3 bolts (1) fixing the motor mount to the electric drive transmission.
8. Remove and discard 1 bolt (2) fixing the motor mount to the subframe.



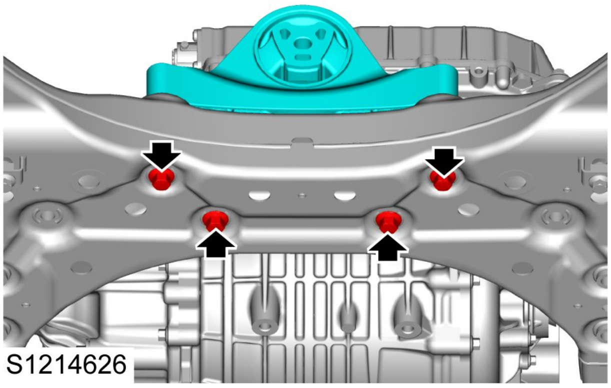
S1214624

9. Remove and discard 4 bolts (1) fixing the rear mount bracket to the electric drive transmission.
10. Remove 1 bolt (2) and washer (3) fixing the rear mount to the rear mount bracket, and discard the bolt.



S1214625

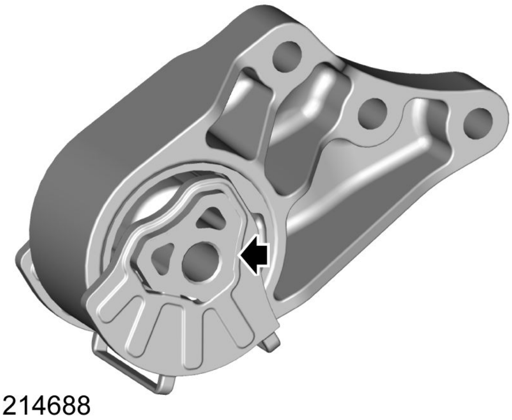
11. Remove the electric drive transmission assembly slowly.
12. Remove 4 bolts fixing the rear mount to the subframe.



S1214626

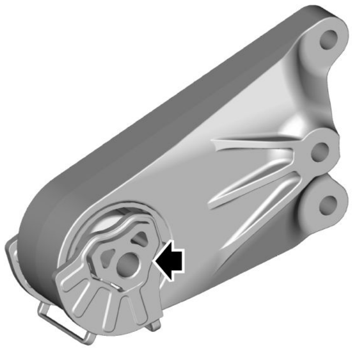
Refit

1. Fit 4 bolts fixing the rear mount to the subframe, tighten them to **90-110Nm**, and check the torque.
2. Fit 4 new bolts fixing the rear mount bracket to the electric drive transmission, tighten them to **(63-77) Nm+ (85-95)** °, and check the torque.
3. Fit 3 new bolts fixing the transmission mount to the electric drive transmission, tighten them to **(63-77) Nm+ (85-95)** °, and check the torque.
4. Fit 3 new bolts fixing the motor mount to the electric drive transmission, tighten them to **(63-77) Nm+ (85-95)** °, and check the torque.
5. Lift the electric drive transmission and slowly position it to the subframe.
6. Fit 1 new bolt fixing the rear mount to the mount bracket with 1 washer, tighten it to **(81-99) Nm+ (85-95)** °, and check the torque.
7. Ensure that the pad of transmission mount is in right position before fixing.



S1214688

8. Fit 1 new bolt fixing the transmission mount to the subframe, tighten it to **(81-99) Nm+ (85-95)** °, and check the torque.
9. Ensure that the pad of motor mount is in right position before fixing.



S1214689

10. Fit 1 new bolt fixing the motor mount to the subframe, tighten it to **(81-99) Nm+ (85-95)** °, and check the torque.
11. Fit the subframe and the electric drive transmission.

☞**Subframe Mounting**

12. Fit 2 bolts fixing the electric drive transmission lower insulator to the electric drive transmission casing, tighten them to **5-7Nm**, and check the torque. Fasten the buckles fixed with the upper insulator.
13. Fit the compressor bracket.

☞**Compressor Bracket Refit**

14. Program, encode and perform a self-learning for the power electronic box PEB and drive motor. Refer to Module Self-learning and Programming Manual, “Power Electronic Box (PEB)”.
15. Electrical Park Position Learning. Refer to Module Self-learning and Programming Manual - “Vehicle Control Unit (VCU)”.

Differential Oil Seal - Left

Remove

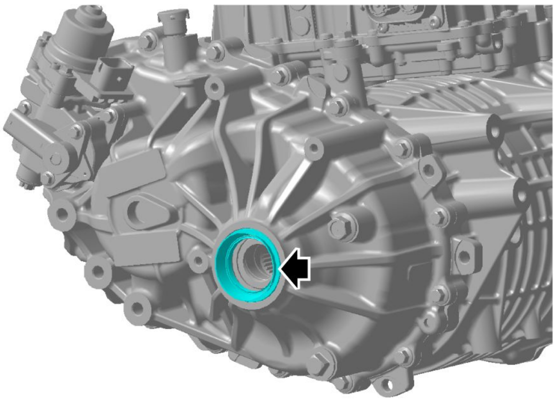
1. Remove the bottom deflector.

☞**Bottom Deflector Remove**

2. Remove the front left axle shaft assembly.

☞**Front Left Axle Shaft Assembly Remove**

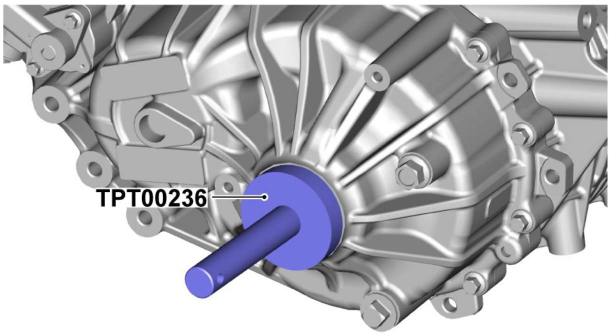
3. Remove the left differential oil seal and discard it.



S1214619

Refit

1. Fit a new left differential oil seal with special tool **TPT00236**.



S1214620

2. Fit the front left axle shaft assembly.

☞**Front Left Axle Shaft Assembly Refit**

3. Fit the bottom deflector.

☞**Bottom Deflector Refit**

Electric Drive Transmission Disassembling

Remove

1. Remove electric drive transmission and suspension.

☞**Electric Drive Transmission and Suspension Remove**

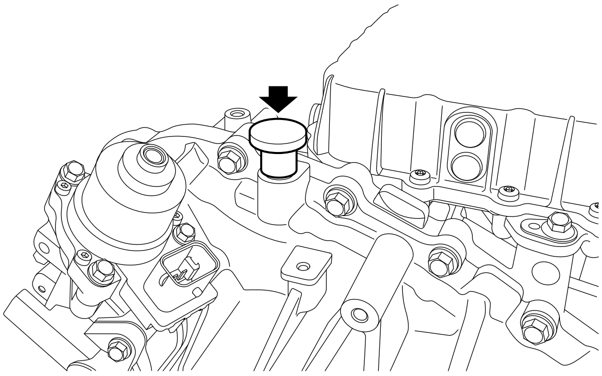
2. Remove the electrical park module.

☞**Electrical Park Module Remove**

3. Remove the electric drive transmission upper insulator.
4. Remove the differential oil seal - left and discard it.

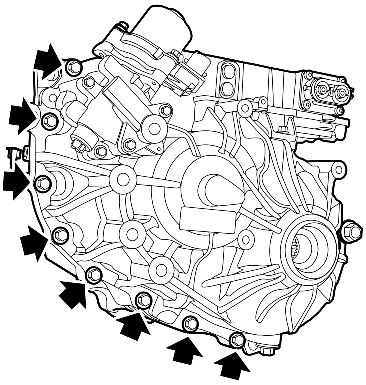
☞**Differential Oil Seal - Left Remove**

5. Remove and discard the vent plug.

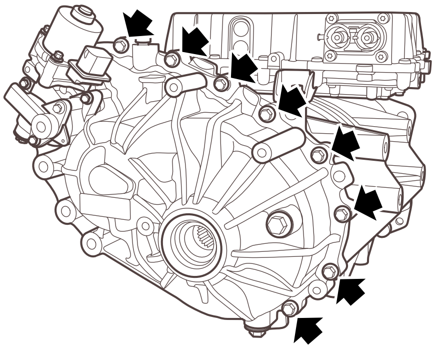


S1214470

6. Remove 16 bolts fixing retarder housing to drive motor housing to separate the housings.

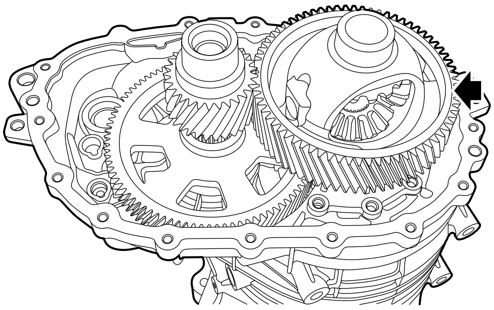


S1214404



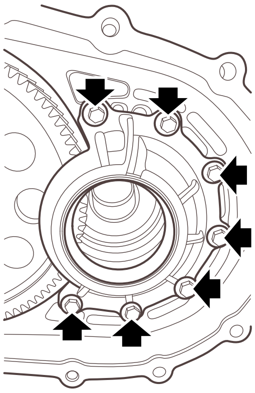
S1214405

7. Remove the differential assembly.



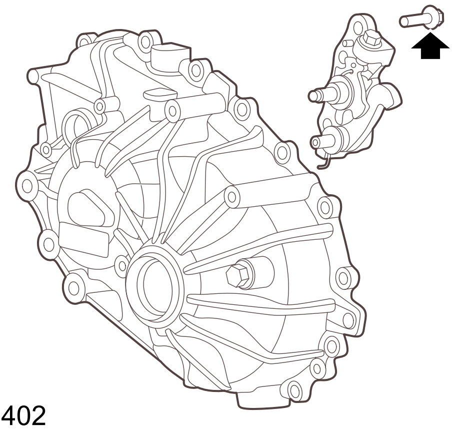
S1214409

8. Remove 7 bolts fixing the bearing support plate to the drive motor housing.



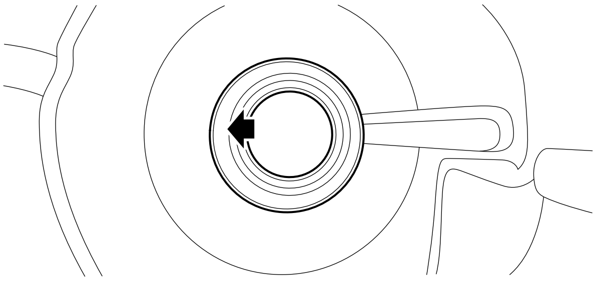
S1214398

9. Remove the intermediate shaft assembly.
10. Remove and discard 4 bolts fixing the park brake assembly to the retarder housing.



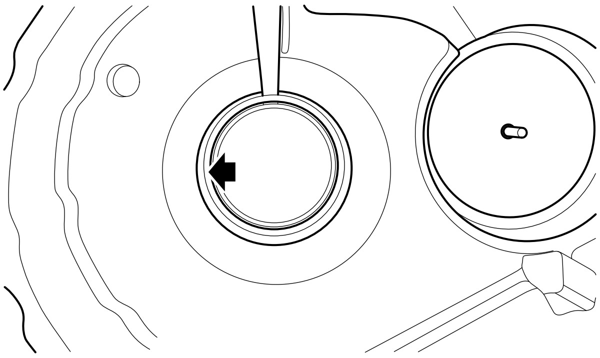
S1214402

11. Remove and discard the differential cone bearing outer ring.



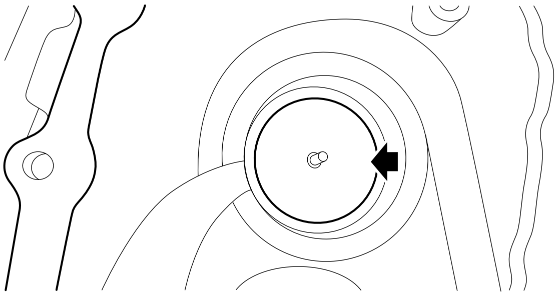
S1214410

12. Remove and discard the differential cone bearing outer ring gasket.



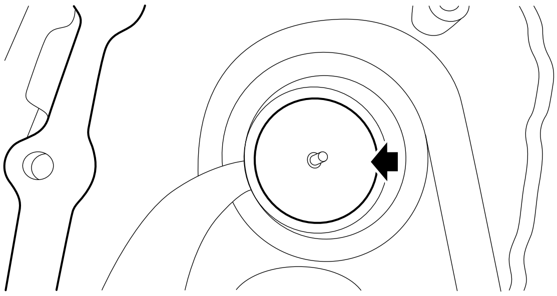
S1214411

13. Remove and discard the intermediate shaft bearing adjusting gasket.



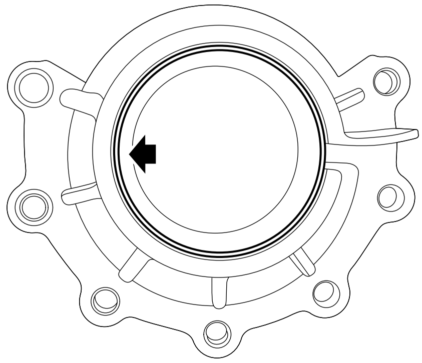
S1214400

14. Remove the intermediate shaft oil nozzle.



S1214400

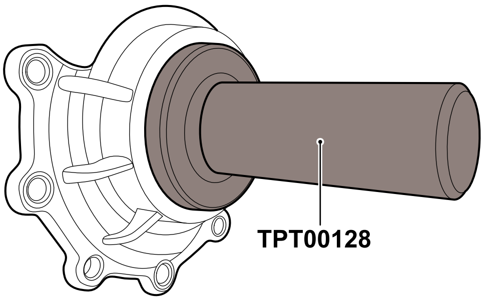
15. Remove and discard the differential cone bearing outer ring fixing to the bearing support plate.



S1214397

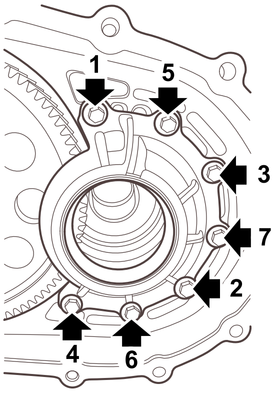
Refit

1. Use special tools to **TPT00128** fit the new differential cone bearing outer ring to the bearing support plate.



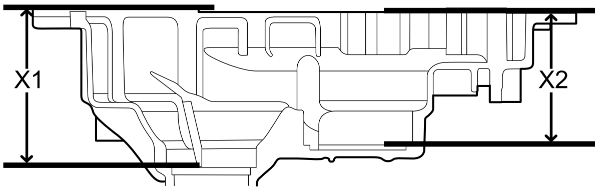
S1214387

2. Fit the intermediate shaft assembly.
3. Fit 7 bolts fixing the bearing support plate to the drive motor housing in the sequence as shown in the figure, tighten them to **26-34Nm**, and check the torque.



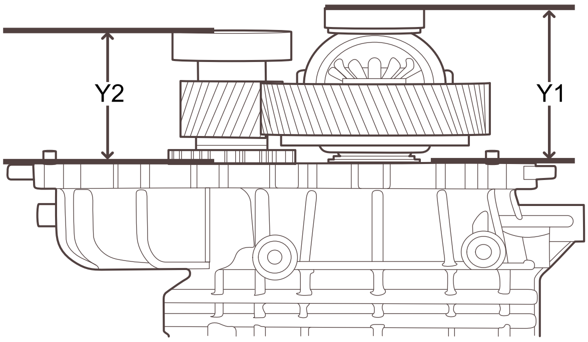
S1214423

4. Fit the differential assembly, and place the cone bearing outer ring to the differential.
5. Measure the distance X1 from housing and case junction surface to differential cone bearing hole.
6. Measure the distance X2 from housing and case junction surface to intermediate shaft bearing hole.



S1214421

7. Measure the distance Y1 from housing and case junction surface to differential cone bearing.
8. Measure the distance Y2 from housing and case junction surface to intermediate shaft bearing.



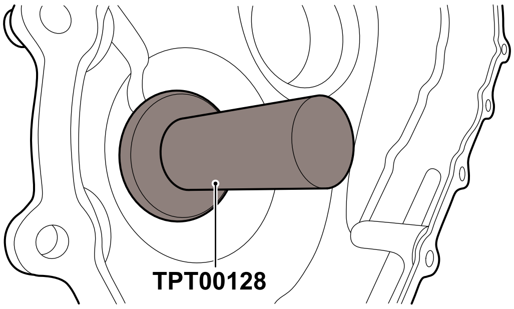
S1214420

Differential bearing adjusting shim selection requirement, interference: 0.1-0.15mm	
Measure the clearance (X) (base surface of housing shaft to bearing outer ring)	Shim thickness (mm)
X=1.05	1.15
1.05 < X≤1.1	1.2
1.1 < X≤1.15	1.25
1.15 < X≤1.2	1.3
1.2 < X≤1.25	1.35
1.25 < X≤1.3	1.4
1.3 < X≤1.35	1.45
1.35 < X≤1.4	1.5
1.4 < X≤1.45	1.55
1.45 < X≤1.5	1.6
1.5 < X≤1.55	1.65
1.55 < X≤1.6	1.7
1.6 < X≤1.65	1.75
1.65 < X≤1.7	1.8
1.7 < X≤1.75	1.85
1.75 < X≤1.8	1.90

Intermediate shaft bearing adjusting shim selection requirement, interference: 0-0.05mm	
Measure the clearance (X) (base surface of housing shaft to bearing outer ring)	Shim thickness (mm)
1.4≤X < 1.45	1.45
1.45≤X < 1.5	1.5
1.5≤X < 1.55	1.55

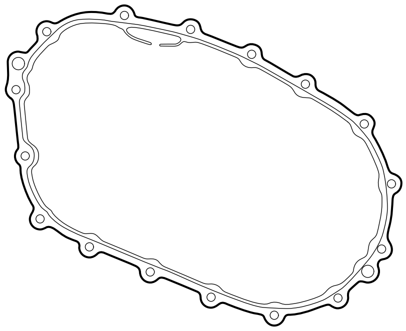
1.55≤X < 1.6	1.6
1.6≤X < 1.65	1.65
1.65≤X < 1.7	1.7
1.7≤X < 1.75	1.75
1.75≤X < 1.8	1.8
1.8≤X < 1.85	1.85
1.85≤X < 1.9	1.9
1.9≤X < 1.95	1.95
1.95≤X < 2	2
2≤X < 2.05	2.05
2.05≤X < 2.1	2.1
2.1≤X < 2.15	2.15
2.15≤X < 2.2	2.2
2.2≤X < 2.24	2.25

9. Fit differential bearing adjusting gasket.
10. Use special tools to **TPT00128** fit the new differential cone bearing outer ring to the housing.



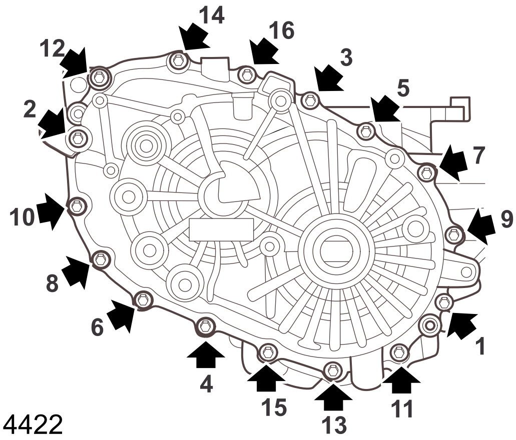
S1214386

11. Fit the intermediate shaft oil nozzle.
12. Fit the intermediate shaft bearing adjusting gasket.
13. Fit 4 new bolts fixing the park brake assembly to the retarder housing, tighten them to **50Nm+90°**, and check the torque.
14. Apply sealant to the motor side housing.



S1214401

15. Fit 16 bolts fixing the retarder housing to the drive motor housing in the sequence as shown in the figure, tighten them to **26-34Nm**, and check the torque.



S1214422

16. Fit the new vent plug.
17. Fit the new differential oil seal - left.

☞**Differential Oil Seal - Left Refit**

18. Fit the electric drive transmission upper insulator.
19. Fit the electrical park module assembly.

☞**Electrical Park Module Refit**

20. Fit electric drive transmission and suspension.

☞**Electric Drive Transmission and Suspension Refit**

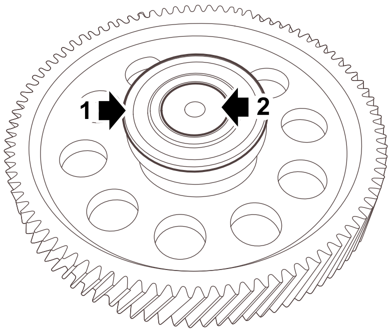
Intermediate Shaft Assembly

Remove

1. Disassemble the electric drive transmission.

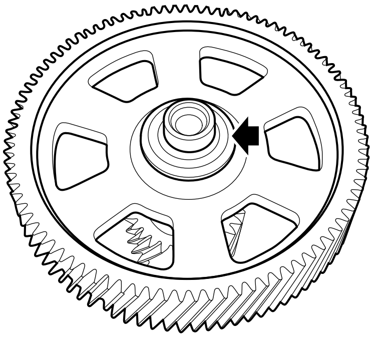
☞**Electric Drive Transmission Disassembling**

2. Remove and discard 1 screw (2) fixing intermediate shaft front bearing to intermediate shaft.
3. Remove and discard intermediate shaft front bearing (1).



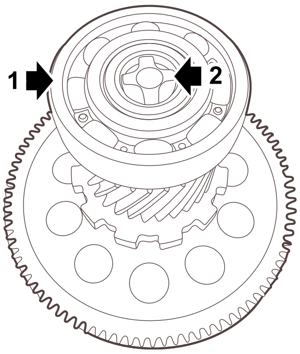
S1214396

4. Remove the spacer bushing.



S1214412

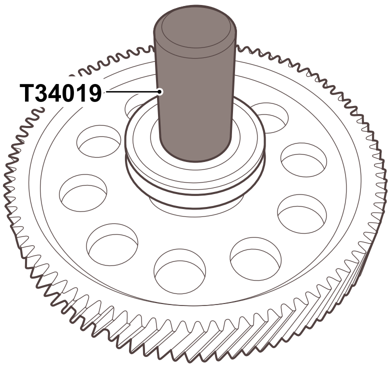
5. Remove and discard intermediate shaft rear bearing (1).
6. Remove and discard intermediate shaft oil pipe (2) and 2 O-rings on it. (Knock out from right to left)



S1214395

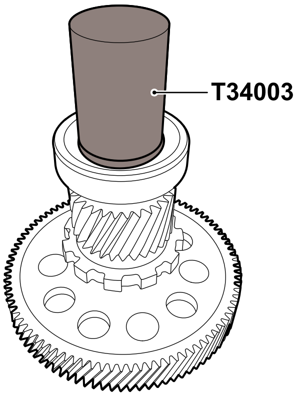
Refit

1. Fit the spacer bushing.
2. Fit a new intermediate shaft front bearing with special tool **T34019**.



S1214389

3. Fit 1 lock screw fixing the intermediate shaft front bearing to intermediate shaft, tighten it to **65-75Nm**, and check the torque.
4. Fit a new intermediate shaft rear bearing with special tool **T34003**.



S1214390

5. Fit 2 new oil pipe O-rings to the new oil pipe, and fit the intermediate shaft oil pipe. (Knock in from left to right)
6. Assemble the electric drive transmission.

☞**Electric Drive Transmission Disassembling and Refit**

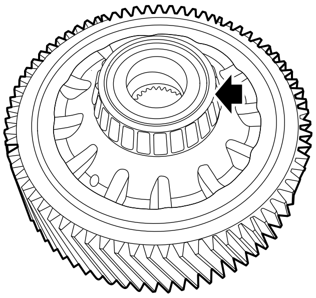
Differential Assembly

Remove

1. Disassemble the electric drive transmission.

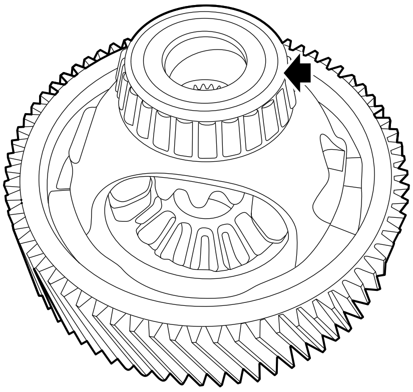
☞**Electric Drive Transmission Disassembling**

2. Remove and discard the differential front cone bearing inner ring.



S1214393

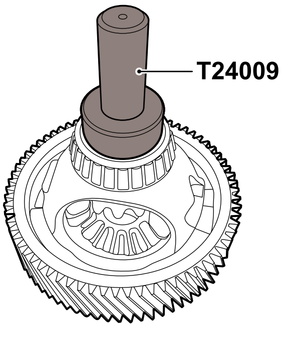
3. Remove and discard the differential rear cone bearing inner ring.



S1214394

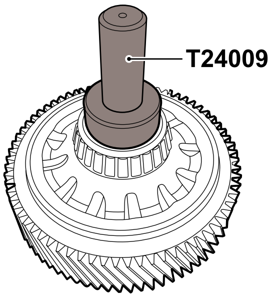
Refit

1. Fit a new differential rear cone bearing inner ring with special tool **T24009**.



S1214391

2. Fit a new differential front cone bearing inner ring with special tool **T24009**.



S1214392

3. Assemble the electric drive transmission.

☞**Electric Drive Transmission Disassembling and Refit**

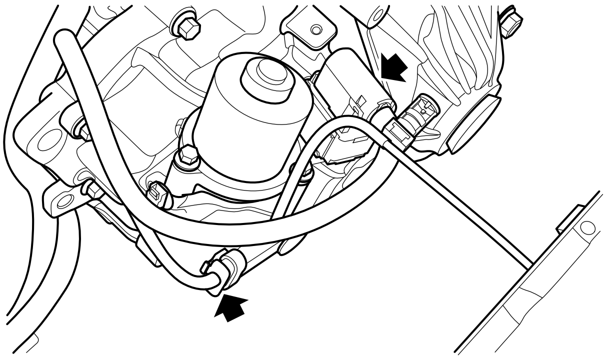
Electrical Park Module

Remove

1. Disconnect the negative battery cable.
2. Carry out high voltage battery isolation procedure - see Manual Service Disconnect - HV Battery Management System

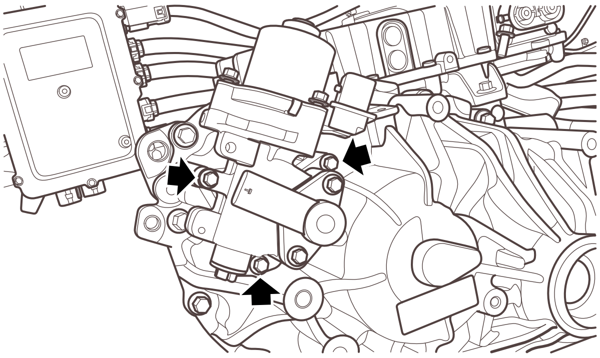
☞**Manual Service Disconnect Remove**

3. Disconnect the harness from the electrical park module.



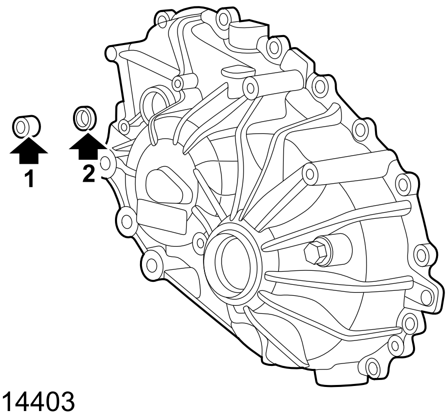
S1214413

4. Remove 3 bolts fixing the electrical park module to the housing, and remove the electrical park module.



S1214414

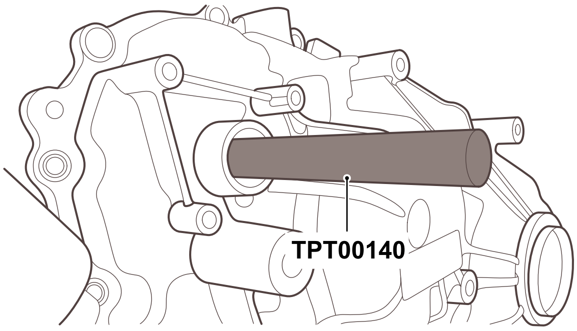
5. Remove the connecting shaft sleeve (1).
6. Remove and discard the gear shift shaft oil seal (2).



S1214403

Refit

1. it a new gear shift shaft oil seal with special tool **TPT00140**.



S1214385

2. Fit the connecting shaft sleeve.
3. Fit 3 bolts fixing the electrical park module to the housing, tighten them to **7-10Nm**, and check the torque.
4. Connect the harness to the electrical park module.
5. Fit the manual service disconnect.

☞**Manual Service Disconnect Refit**

6. Connect the negative battery cable.
7. Electrical Park Position Learning. Refer to Module Self-learning and Programming Manual - “Vehicle Control Unit (VCU)”.

P Gear Unlocking

1. After electrical park position learning, the vehicle will be placed in non-P gear, i.e. P Gear Unlocking. Refer to Module Self-learning and Programming Manual - “Vehicle Control Unit (VCU)”.

After the vehicle starts: if EPB function is abnormal and SCU P gear command is received, the parking mechanism of electric drive transmission will enter P gear again; if the EPB function is normal, the parking mechanism of the electric drive transmission will return to the non-P gear.

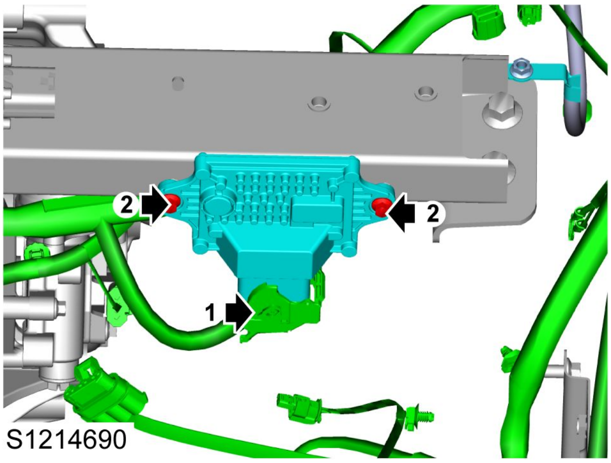
Electrical Park Motor Control Unit

Remove

1. Disconnect the negative battery cable.
2. Carry out high voltage battery isolation procedure - see Manual Service Disconnect - HV Battery Management System

☞**Manual Service Disconnect Remove**

3. Disconnect the harness (1) from the electrical park motor control unit.
4. Remove 2 bolts (2) fixing the electrical park motor control unit to the PDU bracket.



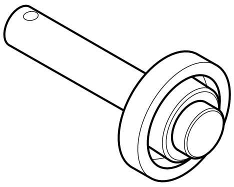
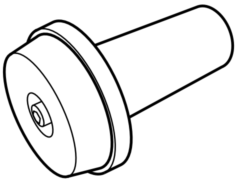
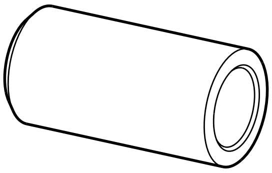
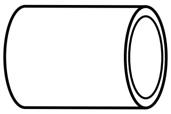
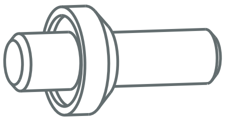
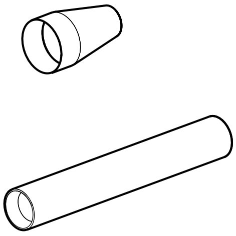
Refit

1. Fit 2 bolts fixing the electrical park motor control unit to the PDU bracket, tighten them to **7-10Nm**, and check the torque.
2. Connect the harness to the electrical park motor control unit.
3. Fit the manual service disconnect.

☞**Manual Service Disconnect Refit**

4. Connect the negative battery cable.
5. Electrical Park Position Learning. Refer to Module Self-learning and Programming Manual - “Vehicle Control Unit (VCU)”.

Special Tools

Tool Number	Description	Picture
TPT00236	Replacer, drive shaft oil seal	 TPT00236
TPT00128	Replacer, outer track of tapered roller bearing,differential	 TPT00128
T34019	Remove upper and lower arm bush	 T34019
T34003	Remover tailing arm bush	 T34003
T24009	Replacer, inner track of taper bearing	 T24009
TPT00140	Replacer park shaft oil seal	 TPT00140

HVAC System

Specifications

Torque

Description	Value
Bolt-Compressor to compressor bracket	19-25Nm
Nut-Air conditioner pipe A to Air conditioner pipe B	7-10Nm
Bolt-Air conditioner box assembly to body	4-6Nm
Nut-Air conditioner box assembly to body	4-6Nm
Bolt-Evaporator to expansion valve	19-25Nm
Bolt-Expansion valve to air conditioner case assembly	4-6Nm

Service Procedures-General

Odour Removal

1. When the A/C is started under hot and humid conditions, a smell may be blown out from air vents. The components that may produce the smell include:

- Foreign objects or breeding micro-organisms in the A/C filter;
- Breeding micro-organisms on the A/C box housing;
- Breeding micro-organisms on the evaporator;
- Breeding micro-organisms on the air duct;

2. In case of any smell, please observe the following steps for adour removal:

- Replace the A/C filter;
  ☞**A/C Filter Element Replacement**
- Clean the A/C box housing;
- Clean the evaporator;
- Clean the A/C air ducts.

3. The relevant cleaning fluid may be used during cleaning:

- The solution containing 40% vinegar and 60% water;
- Proprietry cleanser, etc.

Refrigerant Recovery and Recharging

Refrigerant Recycle

1. Connect the high pressure-side hose with a quick-disconnection connector to the high-pressure side maintenance connector of A/C system.

***Tip:** Only use refrigerant tanks that are designed for the specific charging station and use the recommended refrigerant. DO NOT mix refrigerant types.*

2. Open the connector valve.
3. Connect the low pressure-side hose with a quick-disconnection connector to the low-pressure side maintenance connector of A/C system.
4. Open the connector valve.
5. Check the high pressure-side and low pressure-side gauges on the filling station control panel and ensure the A/C system is with pressure. There will be no recyclable refrigerant in the system if there is no pressure.
6. Open the high pressure-side and low pressure-side valves.
7. Open the gas and liquid valves on the refrigerant tank.
8. Drain refrigerant oil from the oil separator.
9. Close the oil drain valve.
10. Connect the filling station to a proper power outlet.
11. Connect the main power switch.

***Caution:** Reuse of the recycled lubricant is prohibited. The recycled lubricant will damage the equipment.*

***Caution:** A/C lubricant (PAG) could be recycled together with refrigerant but the AC service equipment can separate lubricant from refrigerant to calculate the quantity of lubricant.*

12. Start the recycle process. For more information about the filling station, refer to manufacturer's instructions.
13. Wait 5 minutes, and then check the low pressure-side pressure gauge on the control panel. If the A/C system keeps vacuum, it is shown that recycle is completed.

***Warning:** Please ensure that the refrigerant tank being used to reclaim the refrigerant has enough capactiy to contain the removed refrigerant. DO NOT mix reclamation tank types.*

14. If the pressure of low side rises from zero, it is shown that there is still refrigerant in the system. Recycle the rest refrigerant. Repeat this step till the system can keep vacuum for 2min.

Drain

1. Check if the high pressure-side and low pressure-side hoses are connected to the A/C system. Open the high pressure-side and low pressure-side valves on the filling

station control panel.

2. Open the gas and liquid valves on the refrigerant tank.

Caution: The evacuating procedure must be carried out before recharging process.

3. Start the vacuum pump and drain. The non-condensable gases (mostly air) will exhaust automatically from the tank during the recycle. The sound of pressure release may be heard.
4. Inspect the system for any leakage. For more information about the filling station, refer to manufacturer's instructions.

Refill of A/C System Lubricating Oil

Tip: Different types of compressor lubricants can not be mixed.

At the moment, it is necessary to refill the lubricating oil drained from A/C system during the recycle period.

Note:

- Tighten the lubricating oil cap at any time to prevent the moisture or contaminates from entering the lubricating oil.
- This operation requires the A/C system is vacuum. DO NOT open the lubricating oil filling valve under the positive pressure condition of A/C system. That will cause the lubricating oil flows back through the vent port of oil bottle.
- The oil level shall not be lower than the oil suction pipe when filling or refilling the lubricating oil, otherwise the air may enter into the A/C system.

1. Apply the lubricating oil with a graduated bottle special for the system.
2. For more information about the filling station, refer to manufacturer's instructions. Add proper amount of A/C lubricating oil to the system.
3. Close the valve when the oil filling volume reaches the required value.

Refill

Caution: The evacuating procedure must be carried out before recharging process.

Refrigerant Refill

1. Close the low pressure-side valve on the control panel.
2. Open the high pressure-side valve on the control panel.
3. For more information about the filling station, refer to manufacturer's instructions.
4. Fill necessary amount of refrigerant to the A/C, and ensure the measurement unit is correct, such as KG or lbs.
5. Start to fill.

Refrigerant Refill Successful

1. Close the high pressure-side valve on the filling station control panel. The two valves shall be closed.
2. Start the vehicle and A/C system.
3. Keep the engine running until the readings on the high pressure-side and low pressure-side gauges are stable.
4. Compare the readings with system specification.
5. Check the evaporator outlet temperature, ensure the operation of A/C system complies with the system specification.
6. Keep the A/C running.
7. Close the high pressure-side connector valve.
8. Disconnect the high pressure-side hose from the vehicle.
9. Open the low pressure-side valve on the control panel. The system will suck the refrigerant from two hoses quickly through the low pressure-side hose.
10. Close the low pressure-side connector valve.
11. Disconnect the low pressure-side hose from the vehicle.

Refrigerant Refill Unsuccessful

Sometimes the filled refrigerant is not fully transmitted to the A/C system. There are 2 causes for this situation:

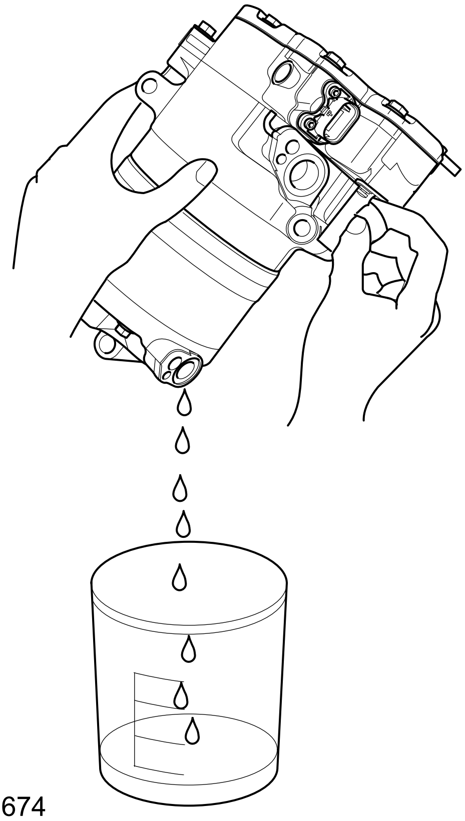
1. The pressure of filling station refrigerant tank is similar to that of the A/C system,
   - thus lead to very slow oil transmission process.
   - For more information about the filling station, refer to manufacturer's instructions.
2. The refrigerant in refrigerant tank of filling station is not enough for full filling.
   - So you must recycle some filled refrigerant from the vehicle. Then drain the A/C system and fill it again.
   - For more information about the filling station, refer to manufacturer's instructions.

A/C Compressor Oil Balance

Tip: Refrigerant oil in the A/C system must be balanced during the compressor replacement.

Tip: Check the oil level in the replacement compressor.

1. Tip: The refrigerant oil in the A/C system must be balanced during compressor replacement.
2. If there is some compressor oil in the replaced compressor, the oil must go through balance treatment according to the following conditions:
    a. Firstly, measure the oil volume in the replaced compressor, pour it out from the compressor intake and exhaust ports, measure with a measuring cup and record the value.



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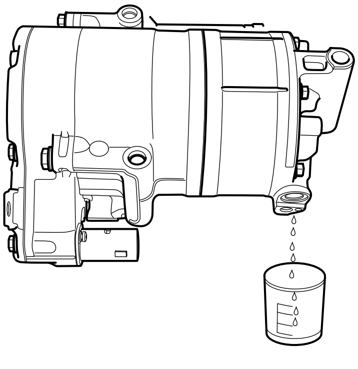

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    b. Pour out the oil from the new compressor, and add the same volume of oil with that of the replaced compressor.

Air Conditioning System Seals

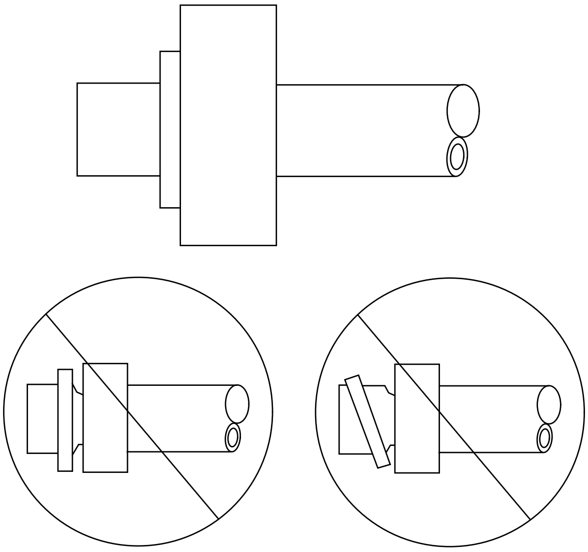
Remove

1. Remove the sealing washer from the A/C refrigerant component.

Tip: Cap or tape the open A/C refrigerant components immediately to prevent system contamination.

2. Inspect the sealing washer for signs of damage to help determining the root cause of the failure.
3. Inspect the A/C refrigerant component for damage or burrs. Repair if necessary.
4. Discard the sealing washer.

Tip: DO NOT reuse sealing washers or rubber O-rings.



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Refit

Tip: It is not necessary to lubricate flat type washers.

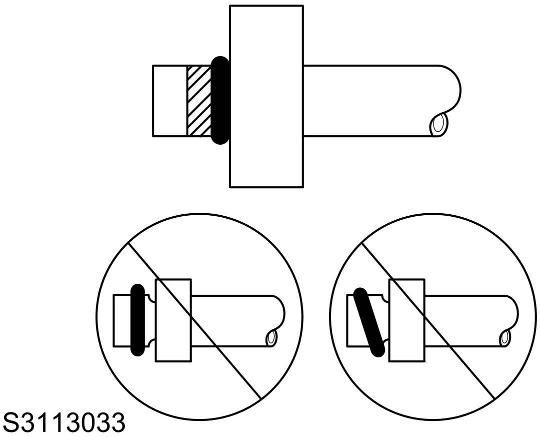
1. Inspect the new sealing washer for any signs of cracks, cuts, or damage.
   Do not use a damaged sealing washer.
2. Remove the cap or tape from the A/C refrigerant components.
3. Using a lint-free, clean and dry cloth, clean the sealing surfaces of the A/C refrigerant components.
4. Carefully install the new sealing washer onto the A/C refrigerant components. The washer must completely bottom against the surface of the fitting.
5. Assemble the remaining A/C refrigerant components. Refer to the appropriate service procedure.

Replacement of A/C System O-ring

Remove

1. Disassemble the A/C refrigerant components. Refer to the appropriate repair procedure.
2. Remove the O-ring seal from the A/C refrigerant component.
3. Inspect the O-ring seal for signs of damage to help determining the root cause of the failure.
4. Inspect the A/C refrigerant component for damage or burrs. Repair if necessary.
5. Cap or tape the A/C refrigerant components.

Tip: Cap or tape the open A/C refrigerant components immediately to prevent system contamination.



6. Discard the O-ring seal.

Refit

1. Inspect the new O-ring seal for any sign of cracks, cuts, or damage. Replace if necessary.
2. Remove the cap or tape from the A/C refrigerant components.
3. Using a lint-free, clean and dry cloth, clean the sealing surfaces of the A/C refrigerant components.
4. Coat the new O-ring seal with a small amount of mineral base 525 viscosity refrigerant oil.

Tip: Never let any mineral-based 525 viscosity refrigerant on new O ring go into the cooling system.

5. Carefully put the new O-ring seal onto the A/C refrigerant component.

Tip: DO NOT reuse O-ring seals.

6. The O-ring seal must be fully seated.
7. Assemble the A/C components.
   Refer to the appropriate repair catalogue.

Service Procedures-Compressor and Condenser

Compressor

Remove

1. Disconnect the negative battery cable.
2. Remove the manual service disconnect.

Manual Service Disconnect Remove

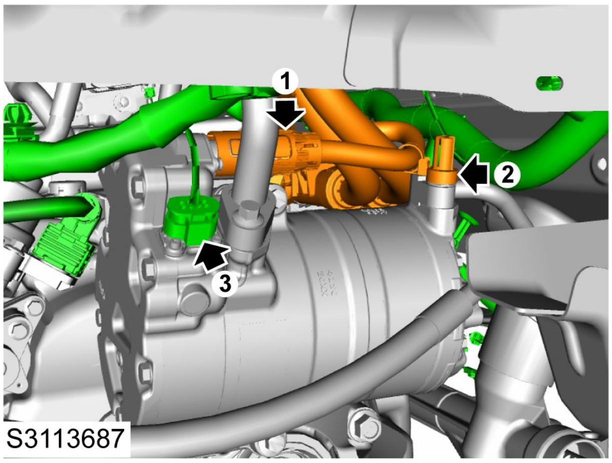
3. Recover the A/C system refrigerant.

Refrigerant Recovery and Refill

4. Remove the front bottom deflector.

Bottom Deflector Remove

5. Disconnect the low-voltage harness connector (3).
6. Loosen the harness clip (2) and disconnect the high-voltage harness connector (1).

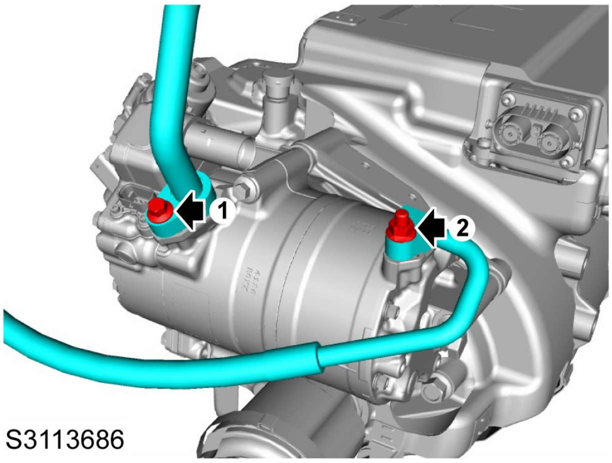


7. Remove 1 bolt (1) fixing the A/C pipeline - condenser to compressor to the compressor, disconnect the pipeline, and discard the seal ring.

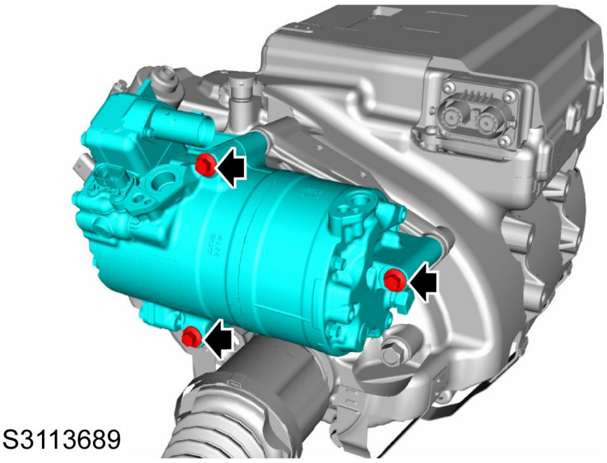
Caution: Protect open connections to prevent contamination.

8. Remove 1 nut (2) fixing the A/C pipeline A - compressor to condenser to the compressor, disconnect the pipeline and discard the seal ring.

Caution: Protect open connections to prevent contamination.



9. Remove 3 bolts fixing the compressor to the compressor bracket.



10. Remove the compressor assembly.

Refit

1. Fix the compressor to the compressor bracket, fit 3 blots, tighten them to **19-25Nm**, and check the torque.
2. Fit a new seal ring on the A/C pipeline and apply clean compressor oil.
3. Fix the A/C pipeline A - compressor to condenser to the compressor, fit 1 nut and tighten it to TBD, and check the torque.
4. Fit a new seal ring on the A/C pipeline and apply clean compressor oil.
5. Fix the A/C pipeline - condenser to evaporator to the compressor, fit 1 nut and tighten it to TBD, and check the torque.
6. Connect the high-voltage harness connector, and secure it with clips.
7. Connect the low-voltage harness connector.
8. Fit the front bottom deflector.

Bottom Deflector Refit

9. Refill the A/C system refrigerant.

Refrigerant Recovery and Refill

10. Fit the manual service disconnect.

Manual Service Disconnect Refit

11. Connect the negative battery cable.

Compressor Bracket

Remove

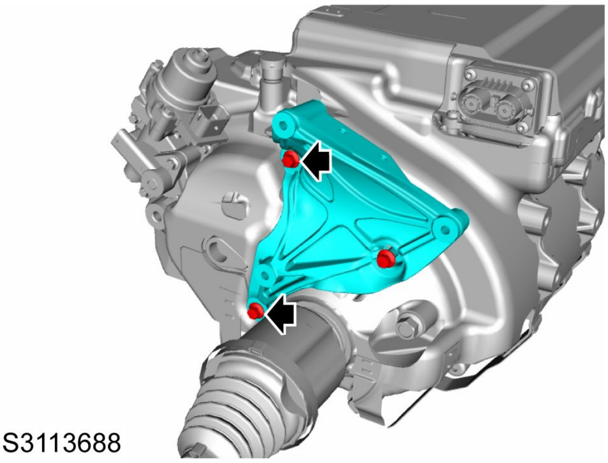
1. Disconnect the negative battery cable.
2. Remove the manual service disconnect.

☞**Manual Service Disconnect Remove**

3. Remove the compressor.

☞**Bottom Deflector Remove**

4. Remove 3 bolts fixing the compressor bracket to the drive motor, and remove the compressor bracket.



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Refit

1. Fix the compressor bracket to the drive motor, fit 3 bolts, tighten them to TBD, and check the torque.
2. Fit the compressor.

☞**Bottom Deflector Refit**

3. Fit the manual service disconnect.

☞**Manual Service Disconnect Refit**

4. Connect the negative battery cable.

Condenser

Remove

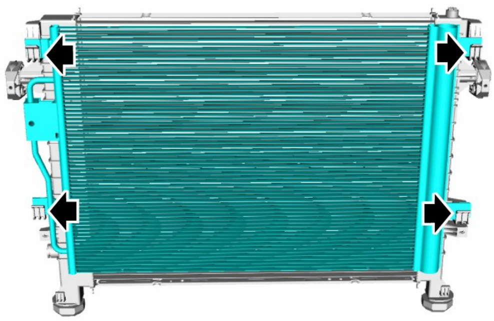
1. Drain the coolant.

☞**Coolant - Drain**

2. Remove the radiator assembly.

☞**Cooling Fan Assembly Remove**

3. Loosen 4 clips fixing the condenser to the radiator, and remove the condenser from the slot.



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Refit

1. Align the condenser with and fit it into 4 clips of the radiator and ensure that it is clamped in place.
2. Fit the radiator assembly.

☞**Radiator Assembly Refit**

3. Refill the coolant.

☞**Coolant - Refill**

Service Procedures-Pipe

A/C Pipeline A - Compressor to Condenser

Remove

1. Disconnect the negative battery cable.
2. Remove the manual service disconnect.

☞**Manual Service Disconnect Remove**

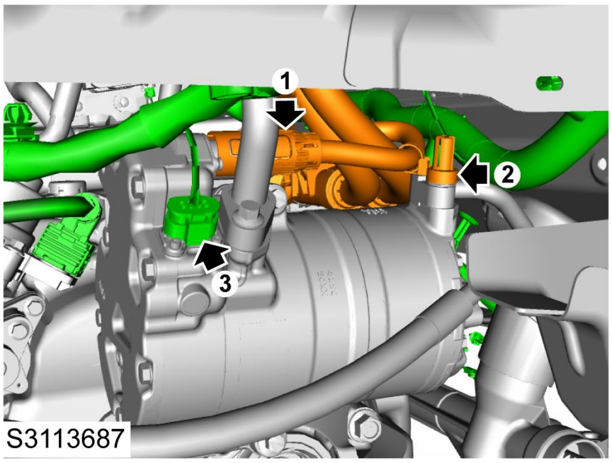
3. Recover the A/C system refrigerant.

☞**Refrigerant Recovery and Refill**

4. Remove the front bottom deflector.

☞**Radiator Airflow Side Deflector - Right Remove**

5. Loosen the compressor high-voltage harness clip (2).



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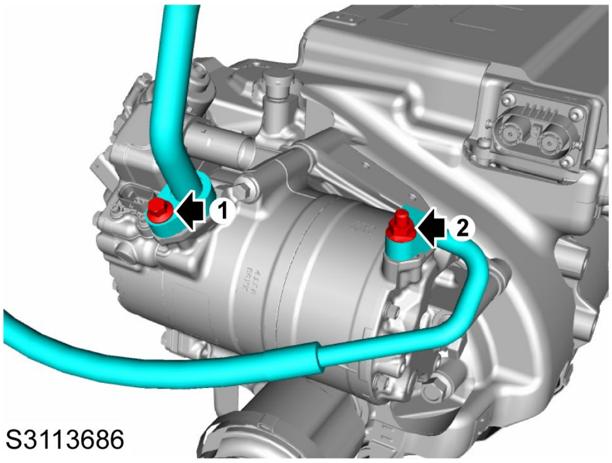
6. Remove 1 nut (2) fixing the A/C pipeline A - compressor to condenser to the compressor.

Caution: Protect open connections to prevent contamination.



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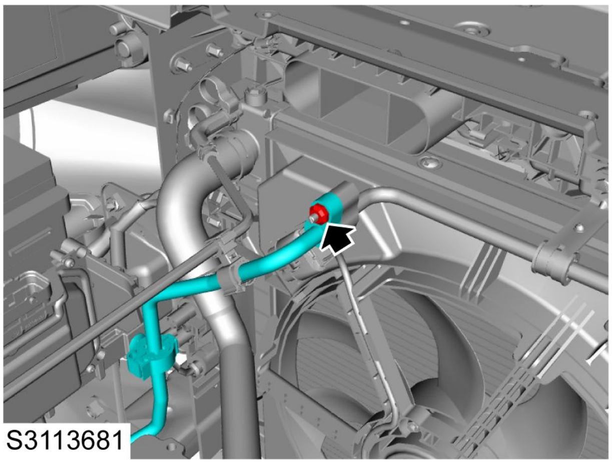
7. Remove 1 nut fixing the A/C pipeline A - compressor to condenser to the A/C pipeline B - compressor to condenser, and disconnect the pipeline and discard the seal ring.

Caution: Protect open connections to prevent contamination.



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8. Loosen the clip, and remove the A/C pipeline A - compressor to condenser.

Refit

1. Fit the A/C pipeline A - compressor to condenser, and secure it with clips.
2. Fit a new seal ring on the A/C pipeline and apply clean compressor oil.
3. Fix the A/C pipeline A - compressor to condenser to the A/C pipeline B - compressor to condenser, fit 1 nut and tighten it to **7-10Nm**, and check the torque.
4. Fit a new seal ring on the A/C pipeline and apply clean compressor oil.
5. Fix the A/C pipeline A - compressor to condenser to the compressor, fit 1 nut and tighten it to TBD, and check the torque.
6. Fit the compressor high-voltage harness clip.
7. Fit the front bottom deflector.

☞**Radiator Airflow Side Deflector - Right Refit**

8. Refill the A/C system refrigerant.

☞**Refrigerant Recovery and Refill**

9. Fit the manual service disconnect.

☞**Manual Service Disconnect Refit**

10. Connect the negative battery cable.

A/C Pipeline B - Compressor to Condenser

Remove

1. Disconnect the negative battery cable.
2. Remove the manual service disconnect.

Manual Service Disconnect Remove

3. Recover the A/C system refrigerant.

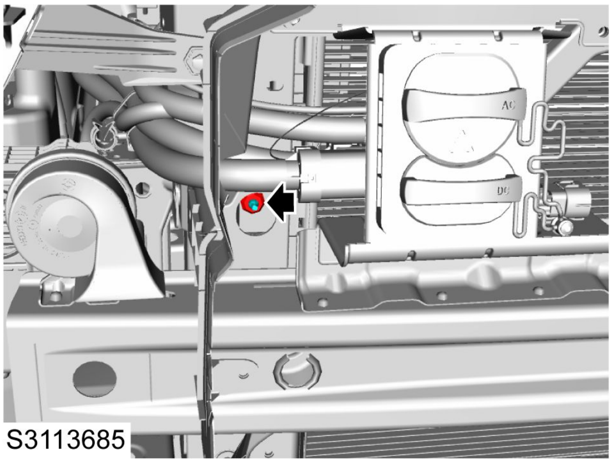
Refrigerant Recovery and Refill

4. Remove the front bumper.

Bottom Deflector Remove

5. Remove 1 nut fixing the A/C pipeline B - compressor to condenser to the condenser, disconnect the pipeline and discard the seal ring.

Caution: Protect open connections to prevent contamination.



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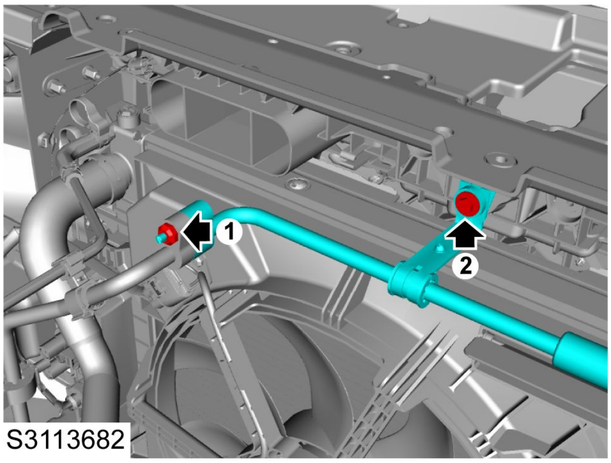
6. Remove 1 bolt (2) fixing the A/C pipeline B - compressor to condenser bracket to the front-end module.
7. Remove 1 nut (1) fixing the A/C pipeline B - compressor to condenser to the A/C pipeline A - compressor to condenser, disconnect the pipeline and discard the seal ring.

Caution: Protect open connections to prevent contamination.



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8. Loosen the clip, and remove the A/C pipeline B - compressor to condenser.

Refit

1. Fit the A/C pipeline B - compressor to condenser, and secure it with clips.
2. Fit a new seal ring on the A/C pipeline and apply clean compressor oil.
3. Fix the A/C pipeline B - compressor to condenser to the A/C pipeline A - compressor to condenser, fit 1 nut and tighten it to TBD, and check the torque.
4. Fix the A/C pipeline B - compressor to condenser bracket to the front-end module, fit 1 nut and tighten it to TBD, and check the torque.
5. Fit a new seal ring on the A/C pipeline and apply clean compressor oil.
6. Fix the A/C pipeline B - compressor to condenser to the condenser, fit 1 nut and tighten it to TBD, and check the torque.
7. Fit the front bumper.

Bottom Deflector Refit

8. Refill the A/C system refrigerant.

Refrigerant Recovery and Refill

9. Fit the manual service disconnect.

Manual Service Disconnect Refit

10. Connect the negative battery cable.

A/C Pipeline - Condenser to Evaporator

Remove

1. Disconnect the negative battery cable.
2. Remove the manual service disconnect.

☞**Manual Service Disconnect Remove**

3. Recover the A/C system refrigerant.

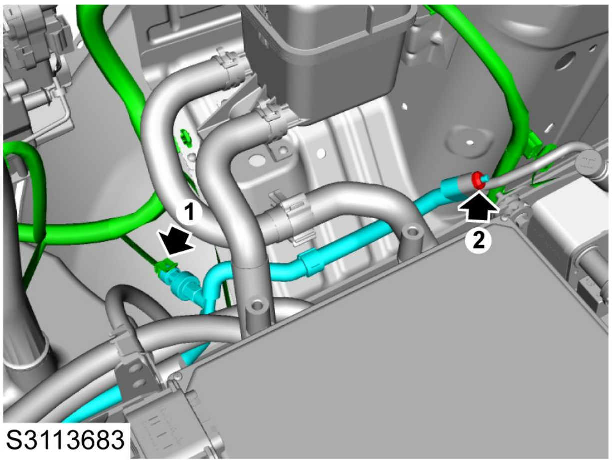
☞**Refrigerant Recovery and Refill**

4. Remove the front bumper.

☞**Radiator Airflow Side Deflector - Right Remove**

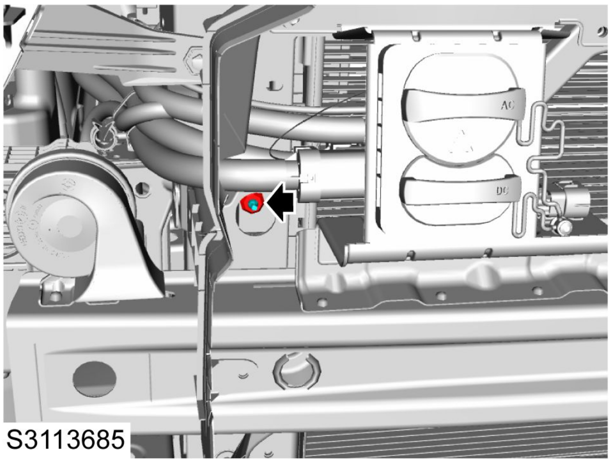
5. Disconnect the connector (1) of the A/C pressure sensor.
6. Remove 1 nut (2) fixing the A/C pipeline - condenser to evaporator to the A/C pipeline - evaporator to compressor, disconnect the pipeline, and discard the seal ring.

Caution: Protect open connections to prevent contamination.



7. Remove 1 nut fixing the A/C pipeline - condenser to evaporator to the condenser, disconnect the pipeline, and discard the seal ring.

Caution: Protect open connections to prevent contamination.



8. Loosen the clip and remove the A/C pipeline - condenser to evaporator.

Refit

1. Fit the A/C pipeline - condenser to evaporator and secure it with clips.
2. Fit a new seal ring on the A/C pipeline and apply clean compressor oil.
3. Fix the A/C pipeline - condenser to evaporator to the condenser, fit 1 nut and tighten it to TBD, and check the torque.
4. Fit a new seal ring on the A/C pipeline and apply clean compressor oil.
5. Fix the A/C pipeline - condenser to evaporator to the A/C pipeline - evaporator to compressor, fit 1 nut and tighten it to TBD, and check the torque.
6. Connect the connector of the A/C pressure sensor.
7. Fit the front bumper.

☞**Radiator Airflow Side Deflector - Right Refit**

8. Refill the A/C system refrigerant.

☞**Refrigerant Recovery and Refill**

9. Fit the manual service disconnect.

☞**Manual Service Disconnect Refit**

10. Connect the negative battery cable.

A/C Pipeline - Evaporator to Compressor

Remove

1. Disconnect the negative battery cable.
2. Remove the manual service disconnect.

Manual Service Disconnect Remove

3. Recover the A/C system refrigerant.

Refrigerant Recovery and Refill

4. Remove the front bottom deflector.

Bottom Deflector Remove

5. Disconnect the connector (2) of the expansion valve solenoid valve.
6. Remove 1 nut (1) fixing the A/C pipeline - evaporator to compressor to the A/C pipeline - condenser to evaporator, disconnect the pipeline and discard the seal ring.

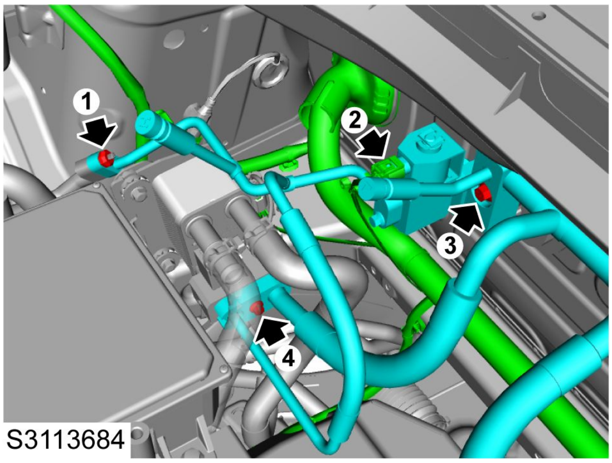
Caution: Protect open connections to prevent contamination.

7. Remove 1 bolt (4) fixing the A/C pipeline - evaporator to compressor to the battery chiller, disconnect the pipeline and discard the seal ring.

Caution: Protect open connections to prevent contamination.

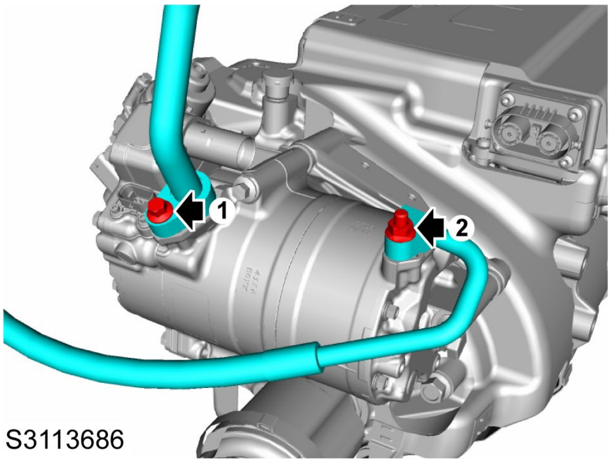
8. Remove 1 bolt (3) fixing the A/C pipeline - evaporator to compressor to the A/C box, disconnect the pipeline and discard the seal ring.

Caution: Protect open connections to prevent contamination.



9. Remove 1 bolt (1) fixing the A/C pipeline - evaporator to compressor to the compressor, disconnect the pipeline and discard the seal ring.

Caution: Protect open connections to prevent contamination.



10. Remove the A/C pipeline - evaporator to compressor.

Refit

1. Fit the A/C pipeline - evaporator to compressor, and secure it with clips.
2. Fit a new seal ring on the A/C pipeline and apply clean compressor oil.
3. Fix the A/C pipeline - evaporator to compressor to the compressor, fit 1 bolt and tighten it to TBD, and check the torque.
4. Fit a new seal ring on the A/C pipeline and apply clean compressor oil.
5. Fix the A/C pipeline - evaporator to compressor to the A/C box, fit 1 bolt and tighten it to TBD, and check the torque.
6. Fit a new seal ring on the A/C pipeline and apply clean compressor oil.
7. Fix the A/C pipeline - evaporator to compressor to the battery chiller, fit 1 bolt and tighten it to TBD, and check the torque.
8. Fit a new seal ring on the A/C pipeline and apply clean compressor oil.
9. Fix the A/C pipeline - evaporator to compressor to the A/C pipeline - condenser to evaporator, fit 1 bolt and tighten it to TBD, and check the torque.
10. Connect the connector of the expansion valve solenoid valve.
11. Fit the front bottom deflector.

Bottom Deflector Refit

12. Refill the A/C system refrigerant.

Refrigerant Recovery and Refill

13. Fit the manual service disconnect.

Manual Service Disconnect Refit

14. Connect the negative battery cable.

A/C Pressure Sensor

Remove

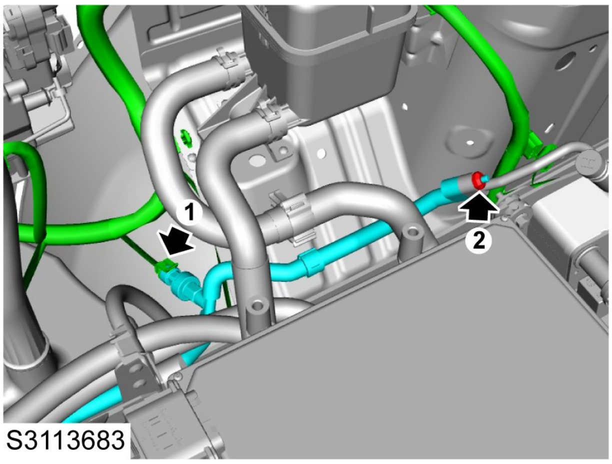
1. Disconnect the negative battery cable.
2. Remove the manual service disconnect.

☞**Manual Service Disconnect Remove**

3. Recover the A/C system refrigerant.

☞**Refrigerant Recovery and Refill**

4. Disconnect the connector (1) of the A/C pressure sensor.



5. Remove the A/C pressure sensor and discard the O-ring.

Caution: Protect open connections to prevent contamination.

Refit

1. Remove the plug, lubricate the new O-ring with clean A/C lubricating oil, and fit the O-ring on the refrigerant pressure sensor.
2. Connect the connector of the A/C pressure sensor.
3. Refill the A/C system refrigerant.

☞**Refrigerant Recovery and Refill**

4. Fit the manual service disconnect.

☞**Manual Service Disconnect Refit**

5. Connect the negative battery cable.

Service Procedures-Conditioner

A/C Box Assembly

Remove

1. Disconnect the negative battery cable.
2. Remove the manual service disconnect.

☞**`Manual Service Disconnect Remove`**

3. Recover the A/C system refrigerant.

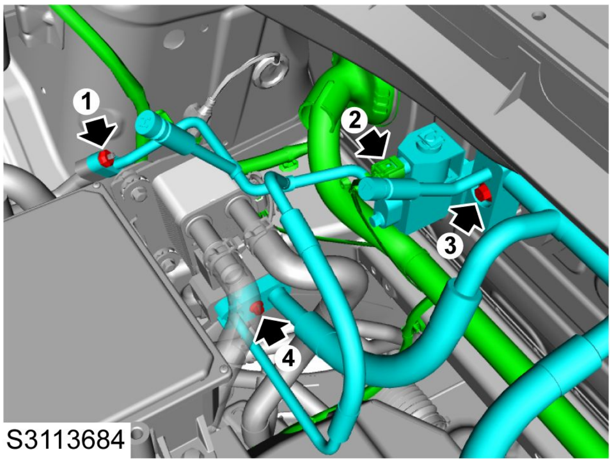
☞**`Refrigerant Recovery and Refill`**

4. Remove the instrument panel beam assembly.

☞**`Instrument Panel Beam Assembly Remove`**

5. Remove 1 bolt (3) fixing the pipeline assembly - condenser to evaporator to the expansion valve, disconnect the pipeline, and discard the seal ring.

Caution: Protect open connections to prevent contamination.



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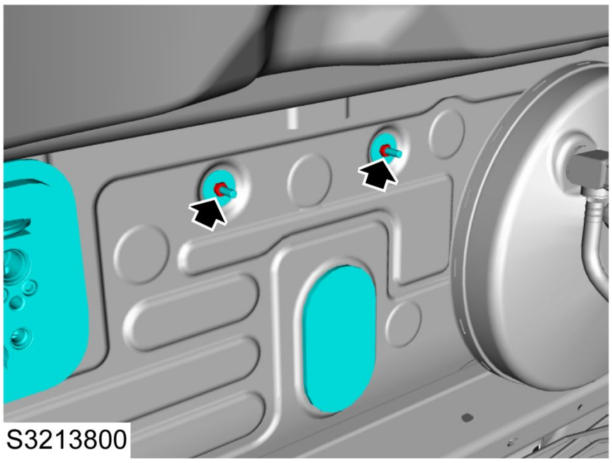
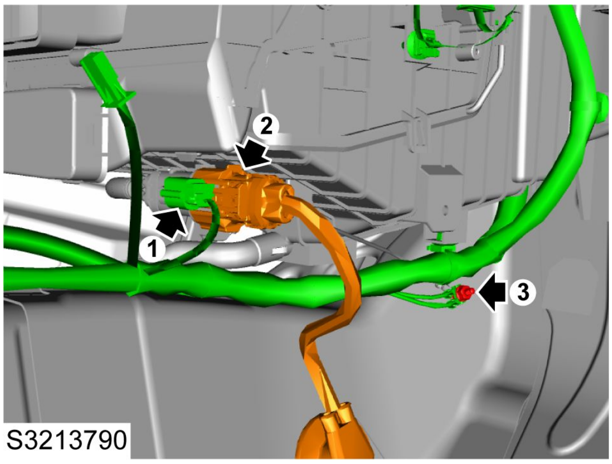
6. Remove 2 nuts fixing the A/C box assembly to the body.



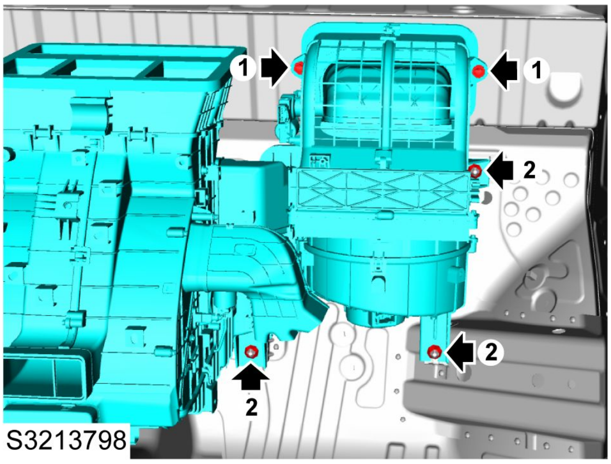
S3213800

7. Remove 1 nut (3) fixing the electric heater grounding wire to the floor.
8. Disconnect the low-voltage harness connector (1) of the electric heater first, then disconnect the high-voltage harness connector (2) of the electric heater.



S3213790

9. Remove 2 bolts (1) and 4 nuts (2) fixing the A/C box to the dash panel.



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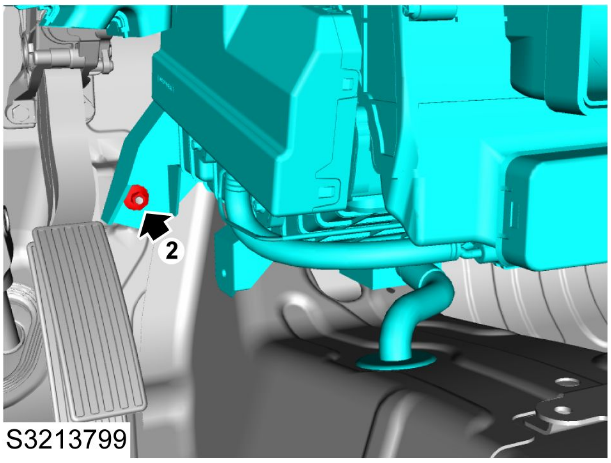


S3213799

10. Disconnect the A/C drain pipe.
11. Disconnect the connector of the A/C box.
12. Loosen the clip and remove the A/C box assembly.

Refit

1. Fit the A/C box assembly and secure it with clips.
2. Connect the connector of the A/C box.
3. Connect the A/C drain pipe properly.
4. Fix the A/C box to the dash panel, fit 2 bolts, tighten them to **4-6Nm**, and check the torque.
5. Fix the A/C box to the dash panel, fit 4 nuts, tighten them to **4-6Nm**, and check the torque.

6. Connect the high-voltage harness connector of the electric heater first, then connect the low-voltage harness connector of the electric heater.
7. Fix the electric heater grounding wire to the floor, fit and tighten 1 nut.
8. Fix the A/C box assembly to the body, fit 2 nuts, tighten them to **4-6Nm**, and check the torque.
9. Fit a new seal ring on the A/C pipeline and apply clean compressor oil.
10. Fix the pipeline assembly - evaporator to compressor to the expansion valve, fit 1 bolt and tighten it to **19-25Nm**, and check the torque.
11. Fit the instrument panel beam assembly.

☞**Instrument Panel Beam Assembly Refit**

12. Refill the A/C system refrigerant.

☞**Refrigerant Recovery and Refill**

13. Fit the manual service disconnect.

☞**Manual Service Disconnect Refit**

14. Connect the negative battery cable.

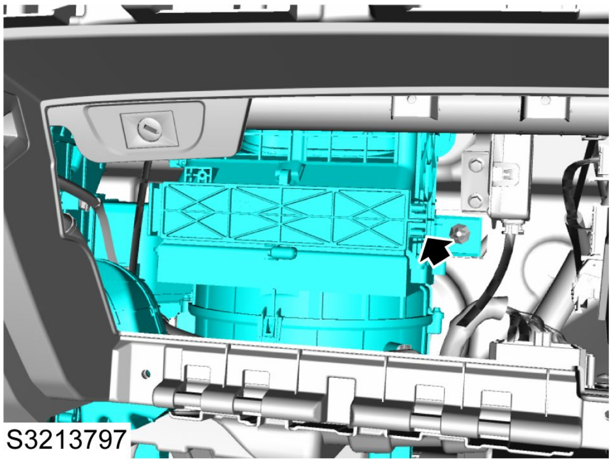
A/C Filter Element

Remove

1. Remove the glove box assembly.

☞**Glove Box Assembly Refit**

2. Loosen the clip, and remove the A/C filter cover.



3. Take out the A/C filter element.

Refit

1. Fit the A/C filter element.
2. Fix the A/C filter cover to the A/C box, and secure it with clips.
3. Fit the glove box assembly.

☞**Glove Box Assembly Refit**

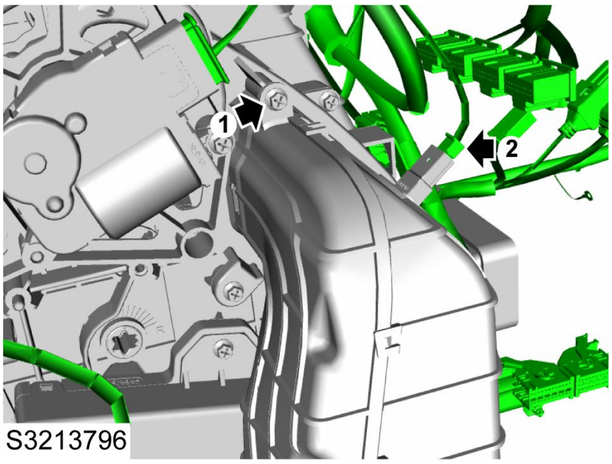
Evaporator Core Assembly

Remove

1. Remove the A/C box assembly.

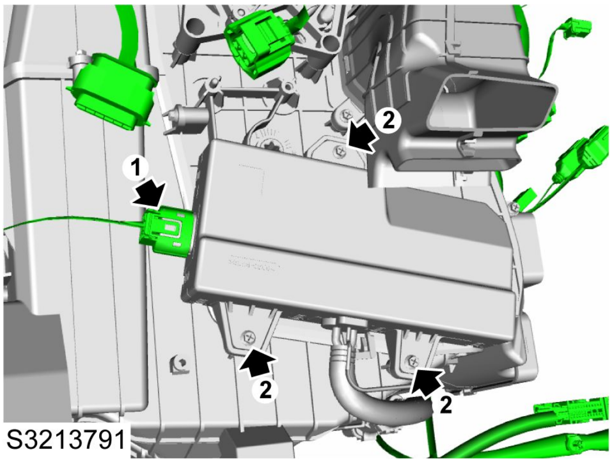
☞**A/C Box Assembly Remove**

2. Remove 2 screws (1) fixing the footwell air outlet on the A/C box, and remove the footwell air outlet.



S3213796

3. Remove 3 screws (2) fixing the electric heater to the A/C box.



S3213791

4. Loosen the clip and remove the electric heater.
5. Remove the screws and clips fixing the vent box to the heater box, and remove the vent box.
6. Remove the retaining clips and screws on the heater box, and separate the heater housing.
7. Remove the evaporator temperature sensor.
8. Remove the evaporator core assembly.

Refit

1. Insert the evaporator core assembly into the heater box.
2. Fit the evaporator temperature sensor.
3. Fit the heater box and secure it with clips and screws.
4. Fix the vent box to the heater box and secure it with clips and screws.
5. Fit the electric heater and secure it with clips.
6. Fix the electric heater to the A/C box, fit and tighten 3 screws.
7. Fix the footwell air outlet to the A/C box, fit and tighten 2 screws.
8. Fit the A/C box assembly.

☞**A/C Box Assembly Refit**

9. Perform a self-learning for the A/C servo motor. Refer to Module Self-learning and Programming Manual, "A/C Servo Motor Self-learning".

Expansion Valve

Remove

1. Disconnect the negative battery cable.
2. Remove the manual service disconnect.

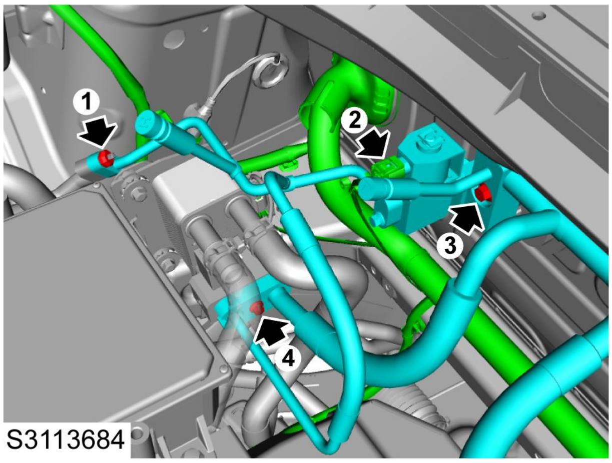
Manual Service Disconnect Remove

3. Recover the A/C system refrigerant.

Refrigerant Recovery and Refill

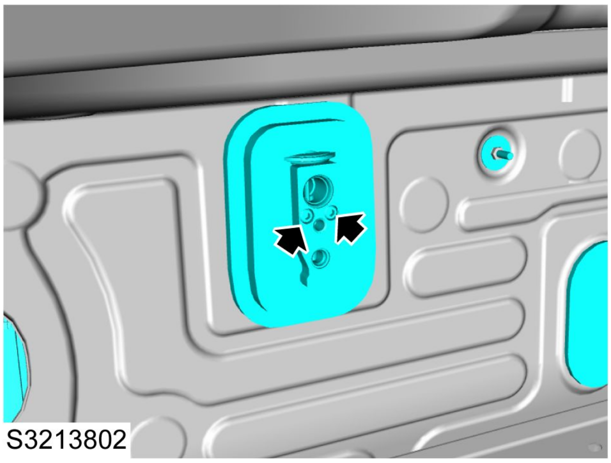
4. Remove 1 bolt (3) fixing the pipeline assembly - evaporator to compressor to the expansion valve, disconnect the pipeline, and discard the seal ring.

Caution: Protect open connections to prevent contamination.



5. Remove 2 bolts fixing the expansion valve to the A/C box, remove the expansion valve, and discard the seal ring.

Caution: Protect open connections to prevent contamination.



Refit

1. Fit a new seal ring on the expansion valve and apply clean compressor oil.
2. Fix the expansion valve to the A/C box, fit 2 bolts, tighten them to **4-6Nm**, and check the torque.
3. Fit a new seal ring on the A/C pipeline and apply clean compressor oil.
4. Fix the pipeline assembly - evaporator to compressor to the expansion valve, fit 1 bolt and tighten it to **19-25Nm**, and check the torque.
5. Refill the A/C system refrigerant.

Refrigerant Recovery and Refill

6. Fit the manual service disconnect.

Manual Service Disconnect Refit

7. Connect the negative battery cable.

Blower

Remove

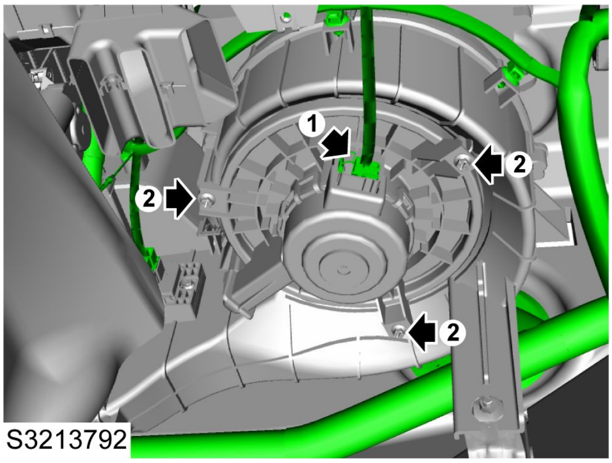
1. Disconnect the negative battery cable.
2. Remove the manual service disconnect.

Manual Service Disconnect Remove

3. Remove the passenger side instrument panel lower closure panel assembly.

Manual Service Disconnect Remove

4. Disconnect the connector (1) of the blower.
5. Remove 3 screws (2) fixing the blower to the A/C box, and remove the blower.



Refit

1. Fix the blower to the A/C box, fit and tighten 3 screws.
2. Connect the connector of the blower.
3. Fit the passenger side instrument panel lower closure panel assembly.

Manual Service Disconnect Remove

4. Fit the manual service disconnect.

Manual Service Disconnect Refit

5. Connect the negative battery cable.

Blower Speed Regulation Resistor

Remove

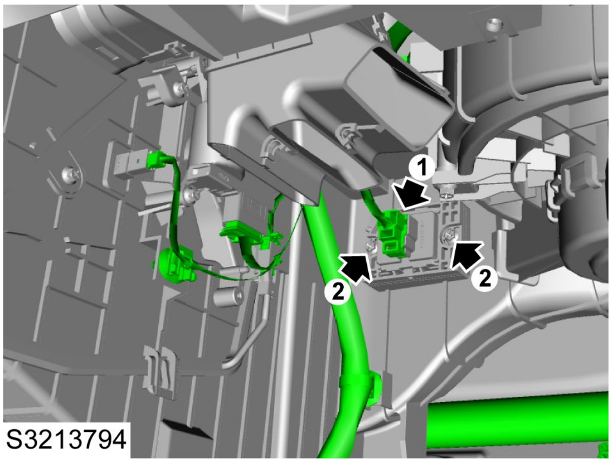
1. Disconnect the negative battery cable.
2. Remove the manual service disconnect.

Manual Service Disconnect Remove

3. Remove the passenger side instrument panel lower closure panel assembly.

Manual Service Disconnect Remove

4. Disconnect the connector (1) from the blower speed regulation resistor.
5. Remove 2 screws (2) fixing the blower speed regulation resistor to the A/C box.



6. Remove the blower speed regulation resistor.

Refit

1. Connect the connector to the blower speed regulation resistor.
2. Fix the blower speed regulation resistor to the A/C box, fit and tighten 2 screws.
3. Fit the passenger side instrument panel lower closure panel assembly.

Manual Service Disconnect Remove

4. Fit the manual service disconnect.

Manual Service Disconnect Refit

5. Connect the negative battery cable.

A/C Drain Pipe

Remove

1. Disconnect the negative battery cable.
2. Remove the manual service disconnect.

☞**Manual Service Disconnect Remove**

3. Remove the centre bottom deflector.

☞**Manual Service Disconnect Remove**

4. Remove the centre console heater closing plate assembly.

☞**Centre Console Heater Closing Plate Assembly Remove**

5. Loosen the clips and remove the A/C drain pipe.

Refit

1. Fit the A/C drain pipe and secure it with clips.
2. Fit the passenger side heater closing plate.

☞**Centre Console Heater Closing Plate Assembly Refit**

3. Fit the centre bottom deflector.

☞**Manual Service Disconnect Remove**

4. Fit the manual service disconnect.

☞**Manual Service Disconnect Refit**

5. Connect the negative battery cable.

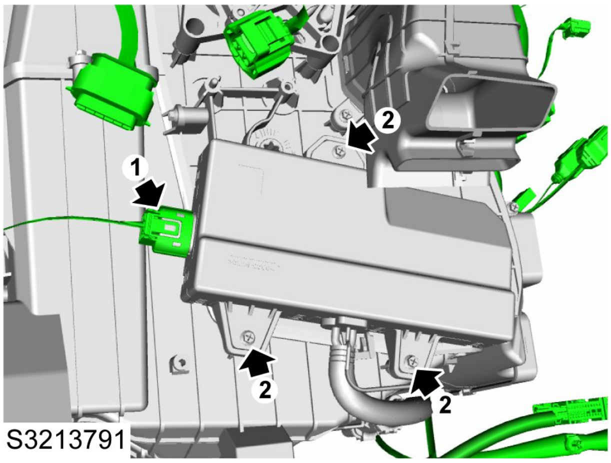
Evaporator Core Temperature Sensor

Remove

1. Remove the A/C box assembly.

☞**A/C Box Assembly Remove**

2. Remove 3 screws (2) fixing the electric heater to the A/C box, and remove the electric heater.



3. Remove the screws and clips fixing the vent box to the heater box, and remove the vent box.
4. Remove the retaining clips and screws on the heater box, and separate the heater housing.
5. Remove the evaporator core temperature sensor.

Refit

1. Fit the evaporator core temperature sensor.
2. Fit the heater box and secure it with clips and screws.
3. Fix the vent box to the heater box and secure it with clips and screws.
4. Fix the electric heater to the A/C box, fit and tighten 3 screws.
5. Fit the A/C box assembly.

☞**A/C Box Assembly Refit**

6. Perform a self-learning for the A/C servo motor. Refer to Module Self-learning and Programming Manual, "A/C Servo Motor Self-learning".

Temperature Damper Actuator

Remove

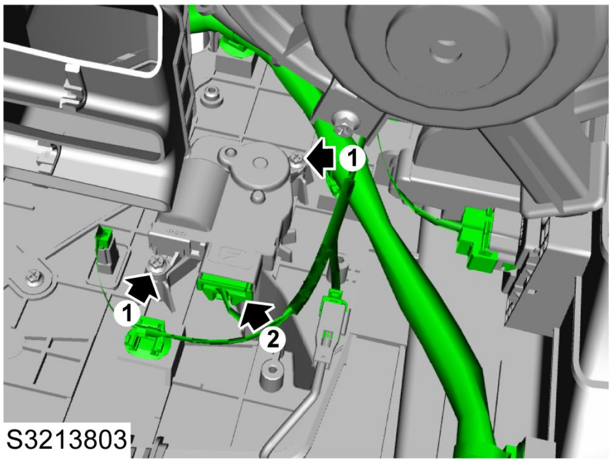
1. Disconnect the negative battery cable.
2. Remove the manual service disconnect.

Manual Service Disconnect Remove

3. Remove the passenger side centre console heater closing plate assembly.

Centre Console Heater Closing Plate Assembly Refit

4. Disconnect the connector (2) of the temperature damper actuator.
5. Remove 2 screws (1) fixing the temperature damper actuator to the A/C box assembly.



6. Disconnect the temperature damper actuator from the temperature damper linkage mechanism.
7. Remove the temperature damper actuator.

Refit

1. Connect the actuator and linkage mechanism of the temperature damper.
2. Fix the temperature damper actuator to the A/C box assembly, fit and tighten 3 screws.
3. Connect the connector of the temperature damper actuator.
4. Fit the passenger side centre console heater closing plate assembly.

Centre Console Heater Closing Plate Assembly Refit

5. Fit the manual service disconnect.

Manual Service Disconnect Refit

6. Connect the negative battery cable.
7. To perform self-learning for the A/C controller, please refer to Module Self-learning and Programming Manual-"Air Conditioning Control Module (HVAC)".

Circulation Damper Actuator

Remove

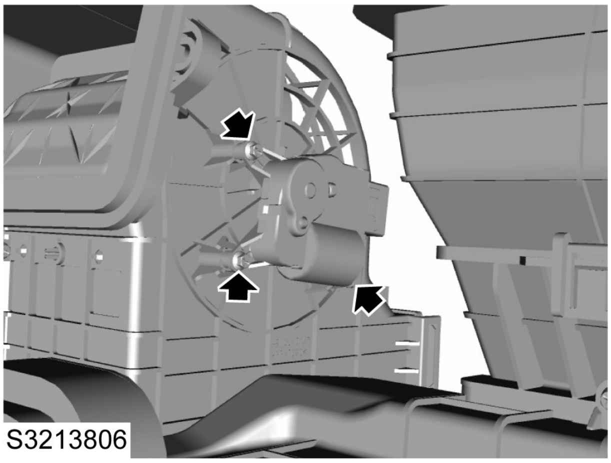
1. Disconnect the negative battery cable.
2. Remove the manual service disconnect.

Manual Service Disconnect Remove

3. Remove the glove box assembly.

Centre Console Heater Closing Plate Assembly Refit

4. Disconnect the connector of the circulation damper actuator.
5. Remove 3 screws fixing the circulation damper actuator to the A/C box assembly.



6. Disconnect the circulation damper actuator from the circulation damper linkage mechanism.
7. Remove the circulation damper actuator.

Refit

1. Connect the circulation damper actuator and the circulation damper linkage mechanism.
2. Fix the circulation damper actuator to the A/C box assembly, fit and tighten 3 screws.
3. Connect the connector of the circulation damper actuator.
4. Fit the glove box assembly.

Glove Box Assembly Refit

5. Fit the manual service disconnect.

Manual Service Disconnect Refit

6. Connect the negative battery cable.

Mode Damper Actuator

Remove

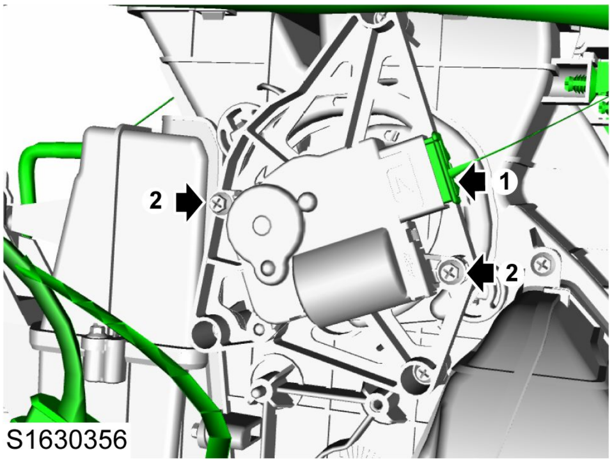
1. Disconnect the negative battery cable.
2. Remove the manual service disconnect.

Manual Service Disconnect Remove

3. Remove the driver side instrument panel lower closure panel assembly.

Centre Console Heater Closing Plate Assembly Remove

4. Disconnect the connector (1) of the mode damper actuator.
5. Remove 2 screws (2) fixing the mode damper actuator to the A/C box assembly.



6. Disconnect the mode damper actuator from the mode damper linkage mechanism.
7. Remove the mode damper actuator.

Refit

1. Connect the mode damper actuator and the mode damper linkage mechanism.
2. Fix the mode damper servo motor to the A/C box assembly, fit and tighten 3 screws.
3. Connect the connector of the mode damper actuator.
4. Fit the driver side instrument panel lower closure panel assembly.

Centre Console Heater Closing Plate Assembly Refit

5. Fit the manual service disconnect.

Manual Service Disconnect Refit

6. Connect the negative battery cable.
7. To perform self-learning for the A/C controller, please refer to Module Self-learning and Programming Manual-"Air Conditioning Control Module (HVAC)".

Electric Heater

Remove

1. Disconnect the negative battery cable.
2. Remove the manual service disconnect.

Manual Service Disconnect Remove

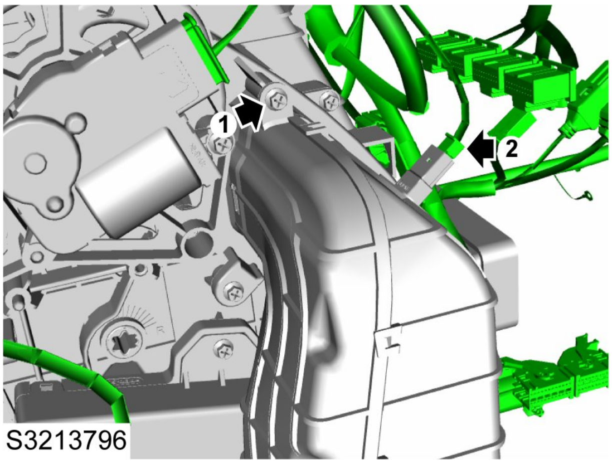
3. Remove the driver side lower trim panel assembly.

Driver Side Lower Trim Panel Assembly Remove

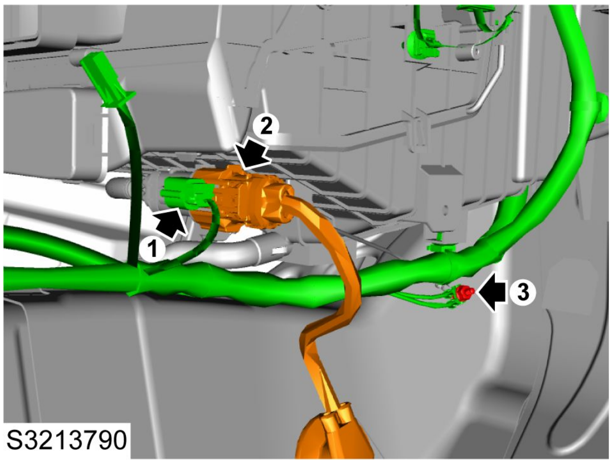
4. Remove the centre console heater closing plate assembly.

Centre Console Heater Closing Plate Assembly Remove

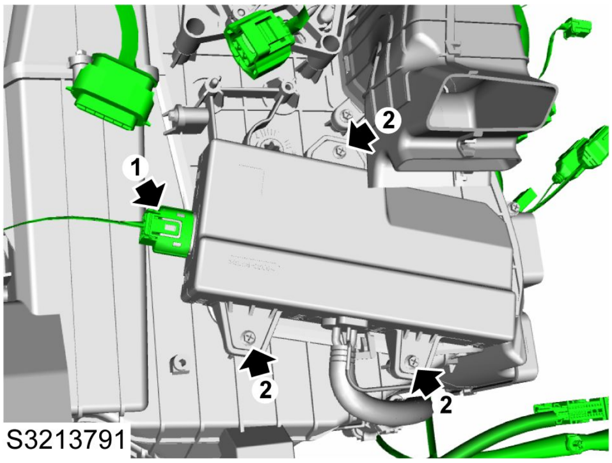
5. Disconnect the connector (2) of the driver side footwell air outlet temperature sensor.
6. Remove 1 screw (1) fixing the driver side footwell air outlet on the A/C box, and remove the driver side footwell air outlet.



7. Lift the carpet, and remove 1 nut (3) fixing the electric heater grounding wire to the underbody.
8. Disconnect the low-voltage harness connector (1) of the electric heater first, then disconnect the high-voltage harness connector (2) of the electric heater.



9. Disconnect the connector (1) of the electric heater.
10. Remove 3 screws (2) fixing the electric heater to the A/C box.



11. Remove the electric heater.

Refit

1. Fix the electric heater to the A/C box, fit and tighten 3 screws.
2. Connect the connector of the electric heater.
3. Connect the high-voltage harness connector of the electric heater first, then connect the low-voltage harness connector of the electric heater.
4. Fix the electric heater grounding wire to the body, fit and tighten 1 nut.
5. Fix the driver side footwell air outlet to the A/C box, fit and tighten 2 screw.
6. Connect the connector of the driver side footwell air outlet temperature sensor.
7. Fit the centre console heater closing plate assembly.

☞**Centre Console Heater Closing Plate Assembly Refit**

8. Fit the driver side lower trim panel assembly.

☞**Driver Side Lower Trim Panel Assembly Refit**

9. Fit the manual service disconnect.

☞**Manual Service Disconnect Refit**

10. Connect the negative battery cable.

Electric Heater Temperature Sensor

Remove

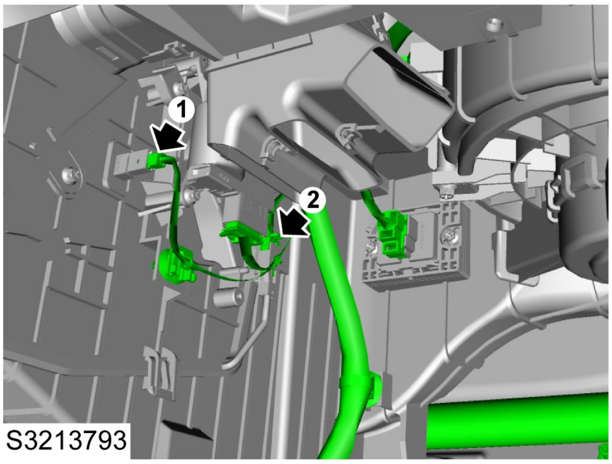
1. Disconnect the negative battery cable.
2. Remove the manual service disconnect.

☞**Manual Service Disconnect Remove**

3. Remove the passenger side centre console heater closing plate assembly.

☞**Centre Console Heater Closing Plate Assembly Remove**

4. Disconnect the connector (1) of the electric heater temperature sensor.



5. Loosen the clip and remove the electric heater temperature sensor.

Refit

1. Fit the electric heater temperature sensor and secure it with clips.
2. Connect the connector of the electric heater temperature sensor.
3. Fit the passenger side centre console heater closing plate assembly.

☞**Centre Console Heater Closing Plate Assembly Refit**

4. Fit the manual service disconnect.

☞**Manual Service Disconnect Refit**

5. Connect the negative battery cable.

Service Procedures-Decompression Valve

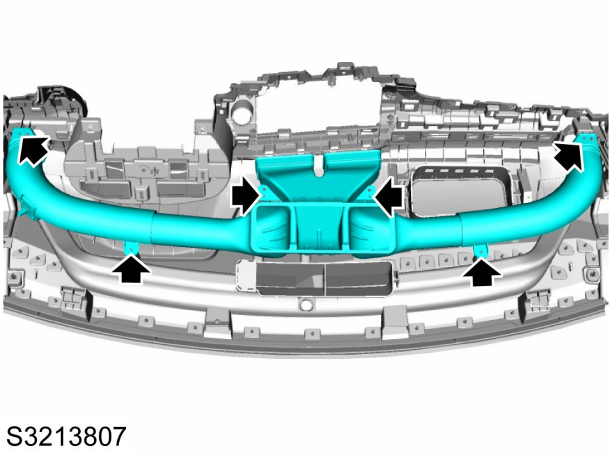
Instrument Panel Air Duct

Remove

1. Remove the upper fascia panel assembly.

Upper Fascia Panel Assembly Refit

2. Remove 6 screws fixing the instrument panel air duct to the upper fascia panel assembly.


S3213807

3. Remove the instrument panel air duct.

Refit

1. Fix the instrument panel air duct on the upper fascia panel assembly, fit 6 screws and tighten them.
2. Fit the upper fascia panel assembly.

Upper Fascia Panel Assembly Refit

Air Outlet Temperature Sensor

Remove

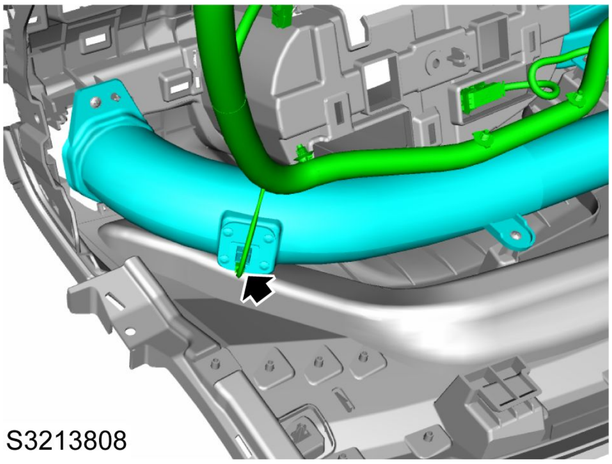
1. Disconnect the negative battery cable.
2. Remove the manual service disconnect.

Manual Service Disconnect Remove

3. Remove the upper fascia panel assembly.

Upper Fascia Panel Assembly Remove

4. Disconnect the connector of the instrument panel air outlet temperature sensor.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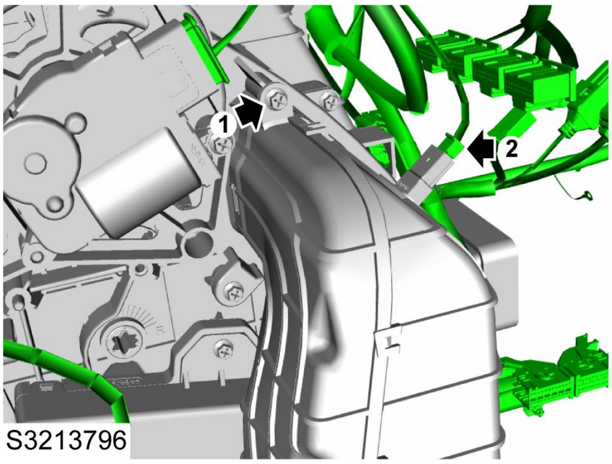
5. Disconnect the connector (2) of the footwell air outlet temperature sensor.



S3213796

6. Loosen the clip, and remove the air outlet temperature sensor.

Refit

1. Fit the air outlet temperature sensor and secure it with clips.
2. Connect the footwell air outlet temperature sensor connector.
3. Connect the connector of the instrument panel air outlet temperature sensor.
4. Fit the upper fascia panel assembly.

Upper Fascia Panel Assembly Refit

5. Fit the manual service disconnect.

Manual Service Disconnect Refit

6. Connect the negative battery cable.

Rear Face Air Duct

Remove

1. Disconnect the negative battery cable.
2. Remove the manual service disconnect.

☞**Manual Service Disconnect Remove**

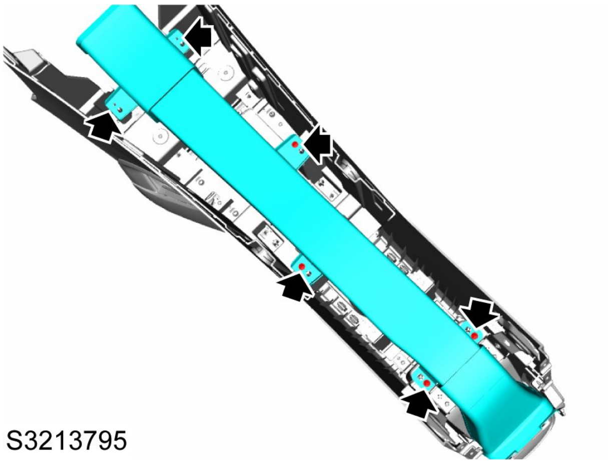
3. Remove the centre console assembly.

☞**Centre Console Assembly Remove**

4. Remove the centre console rear panel assembly.

☞**Centre Console Assembly Remove**

5. Remove 6 screws fixing the rear face air duct to the centre console.


S3213795

6. Remove the rear face air duct.

Refit

1. Fix the rear face air duct to the centre console, fit and tighten 6 screws.
2. Fit the centre console rear panel assembly.

☞**Centre Console Rear Panel Assembly Refit**

3. Fit the centre console assembly.

☞**Centre Console Rear Panel Assembly Refit**

4. Fit the manual service disconnect.

☞**Manual Service Disconnect Refit**

5. Connect the negative battery cable.

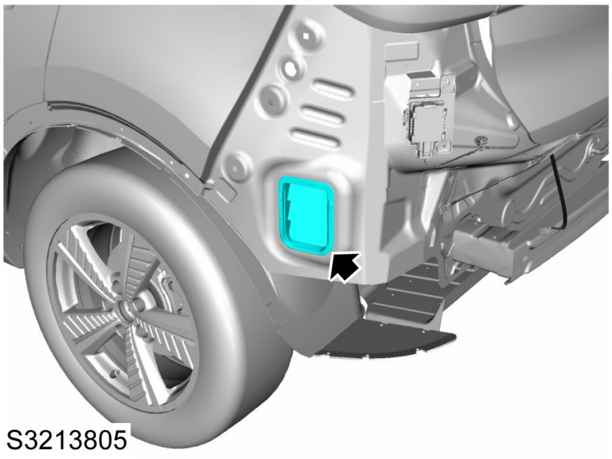
Body Relief Valve - Left

Remove

1. Remove the rear bumper assembly.

☞**Rear Bumper Assembly Refit**

2. Loosen the clip and remove the body relief valve - left from the vehicle.



Refit

1. Fix the body relief valve - left and secure it with clips.
2. Fit the rear bumper assembly.

☞**Rear Bumper Assembly Refit**

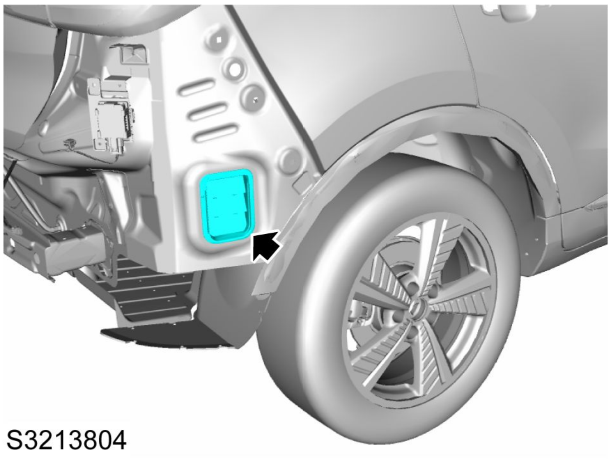
Body Relief Valve - Right

Remove

1. Remove the rear bumper assembly.

☞**Rear Bumper Assembly Refit**

2. Loosen the clip and remove the body relief valve - right from the vehicle.



Refit

1. Fix the body relief valve - right and secure it with clips.
2. Fit the rear bumper assembly.

☞**Rear Bumper Assembly Refit**

Service Procedures-Control

A/C Controller Assembly

Remove

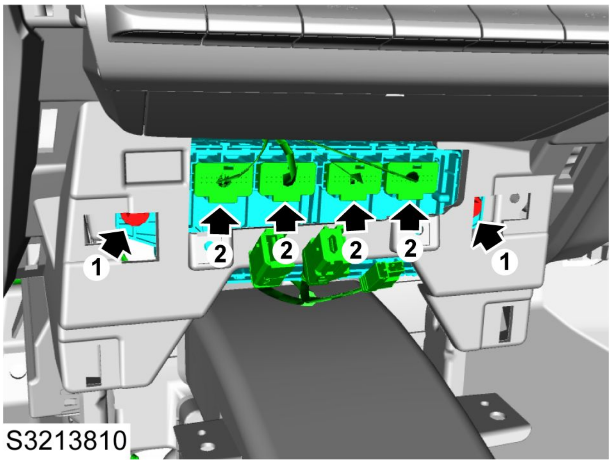
1. Disconnect the negative battery cable.
2. Remove the manual service disconnect.

☞**Manual Service Disconnect Remove**

3. Remove the centre console assembly.

☞**Centre Console Assembly Remove**

4. Disconnect the connector (2) of the A/C controller assembly.
5. Remove 2 bolts (1) fixing the A/C controller assembly to the instrument panel beam.



S3213810

6. Remove the A/C controller assembly.

Refit

1. Fix the A/C controller assembly to the instrument panel beam, fit and tighten 2 bolts.
2. Connect the connector of the A/C controller assembly.
3. Fit the centre console assembly.

☞**Centre Console Assembly Refit**

4. Fit the manual service disconnect.

☞**Manual Service Disconnect Refit**

5. Connect the negative battery cable.
6. To replace or refresh the A/C controller, please refer to Module Self-learning and Programming Manual-"Air Conditioning Control Module (HVAC)".

Interior Temperature Sensor

Remove

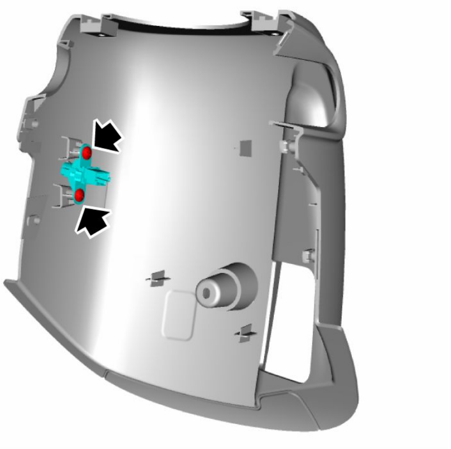
1. Disconnect the negative battery cable.
2. Remove the manual service disconnect.

☞**Manual Service Disconnect Remove**

3. Remove the steering column lower shield.

☞**Instrument Panel Beam Assembly Remove**

4. Remove 2 screws fixing the interior ambient temperature sensor to the steering column lower shield.



S3213811

5. Remove the interior ambient temperature sensor.

Refit

1. Fit 2 screws fixing the interior ambient temperature sensor to the steering column lower shield, and tighten them.
2. Fit the steering column lower shield.

☞**Instrument Panel Beam Assembly Refit**

3. Fit the manual service disconnect.

☞**Manual Service Disconnect Refit**

4. Connect the negative battery cable.

Exterior Temperature Sensor

Remove

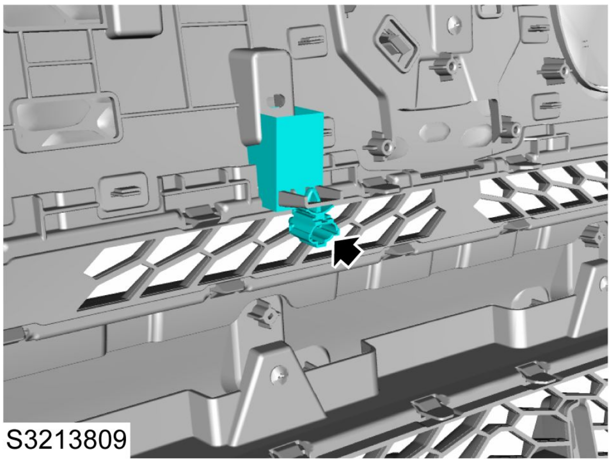
1. Disconnect the negative battery cable.
2. Remove the manual service disconnect.

☞**Manual Service Disconnect Remove**

3. Remove the front bumper.

☞**Front Bumper Remove**

4. Loosen the clips and remove the exterior ambient temperature sensor.


S3213809

Refit

1. Fit the exterior ambient temperature sensor and secure it with clips.
2. Connect the connector of the exterior ambient temperature sensor.
3. Fit the front bumper.

☞**Front Bumper Refit**

4. Fit the manual service disconnect.

☞**Manual Service Disconnect Refit**

5. Connect the negative battery cable.

Solar Sensor

Remove

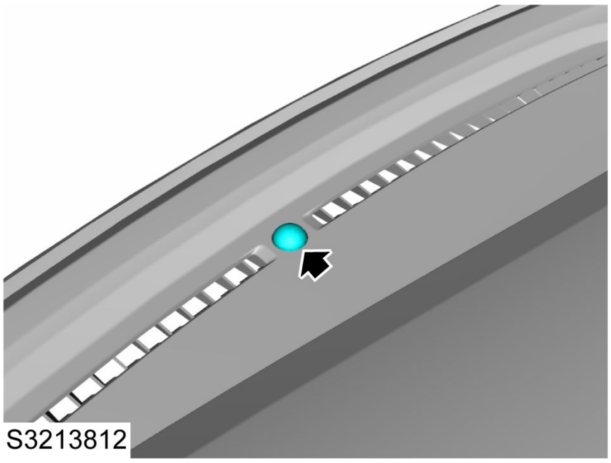
1. Disconnect the negative battery cable.
2. Remove the manual service disconnect.

☞**Manual Service Disconnect Remove**

3. Remove the instrument panel body assembly.

☞**Instrument Panel Beam Assembly Remove**

4. Loosen the clip and remove the daylight sensor.


S3213812

Refit

1. Fit the daylight sensor and secure it with clips.
2. Fit the instrument panel body assembly.

☞**Instrument Panel Beam Assembly Refit**

3. Fit the manual service disconnect.

☞**Manual Service Disconnect Refit**

4. Connect the negative battery cable.

Steering System

Specifications

Torque

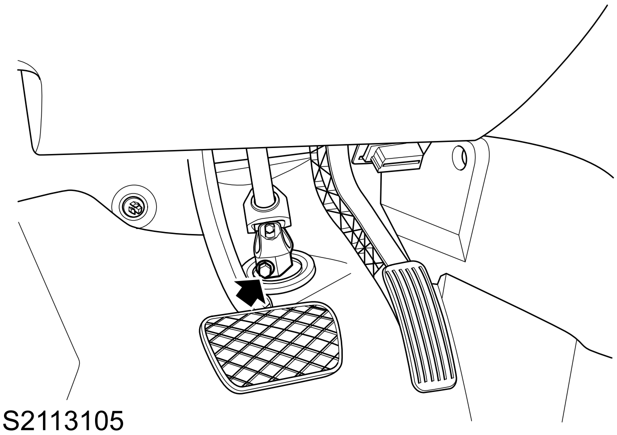
Description	Value
Bolts-Front subframe to body	(81–99)Nm+ (175–185) °
Bolt-Lower Tie Bar Bracket to Lower Tie Bar	(81-99) Nm+ (85-95) °
Bolts-Steering rack to front subframe	90–110Nm
Nut-Front anti-roll bar links to front anti-roll bar	55–65Nm
Bolts-Steering column intermediate shaft to Steering rack	20Nm+120°
Nuts-Steering rack outer tie rod	63-73Nm
Nuts-Steering rack outer tie rod to steering arm	28-32Nm
Steering rack inner tie rod-Steering rack inner tie rod to the steering rack	70-80Nm
Bolts-ESCL to steering column	13-15Nm
Bolts- Steering column to fascia framework	19-25Nm
Bolts- Steering column to fascia framework	22Nm+45°
Bolts-Steering column intermediate shaft to upper steering column	20Nm+120°
Bolts- Steering wheel to steering column	60–70Nm
Screw-Multi function	5–6Nm

Service Procedures

Steering Rack Subassembly

Remove

1. Remove and discard 1 bolt fixing the intermediate shaft universal joint to the steering rack input shaft.



S2113105

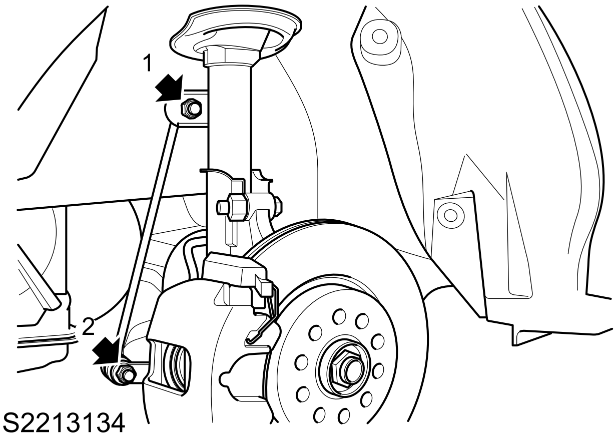
2. Disconnect the intermediate shaft universal joint from the steering rack input shaft.
3. Remove the front&middle bottom deflectors.

Bottom Deflector Remove

4. Remove the steering rack outer tie rod.

Steering Rack Outer Tie Rod Remove

5. Remove and discard the nuts (on both sides) (2) fixing the front anti roll bar connecting rod to the front anti roll bar.



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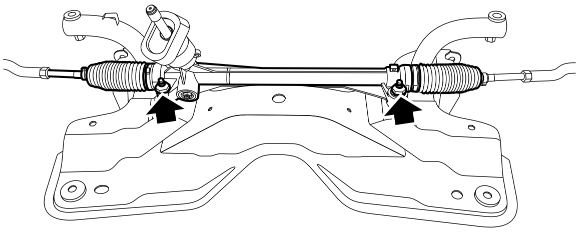
6. Remove and discard 2 bolts and nuts fixing the steering rack to the front subframe.



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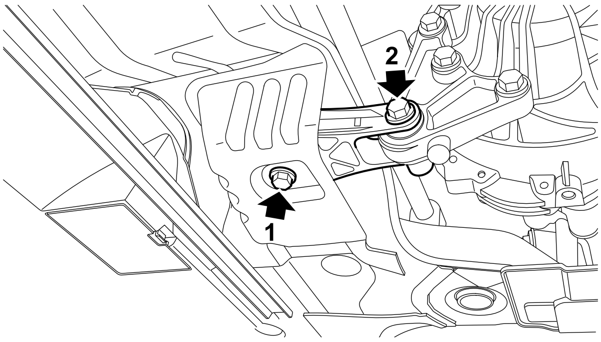
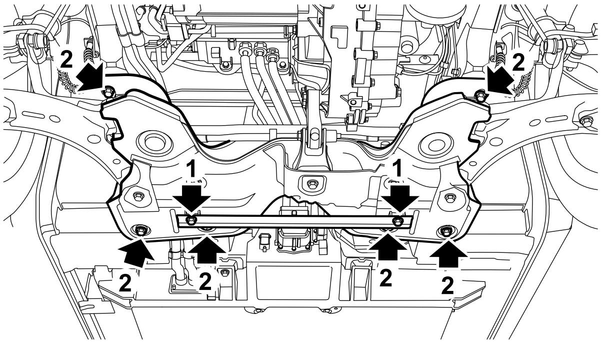
7. Support the electric drive system with the hydraulic lifter.
8. Remove and discard 1 bolt (2) fixing the lower tie rod to the lower tie rod bracket.



S2213367

9. Support the front subframe assembly with the hydraulic lifter.
10. Remove 6 bolts (2) fixing the front subframe assembly to the body.



S2113577

11. Slowly lower the hydraulic lifter and keep the front subframe assembly at a suitable distance from the body.
12. Gently take the steering rack subassembly out of the vehicle.

Refit

1. Ensure that the mounting position of the front subframe assembly is clean.
2. Lift the front subframe assembly to its mounting points on the body with the hydraulic lifter.
3. Locate the front subframe assembly to the body, fit 6 bolts, and tighten them to **(81–99)Nm+ (175–185) °**.
4. Lower the hydraulic lifter, and push it to the safety zone.
5. Locate the lower tie rod to the lower tie rod bracket, fit a new bolt and tighten it to **(81-99) Nm+ (85-95) °**.
6. Lower the hydraulic lifter, and push it to the safety zone.
7. Locate the steering rack assembly to the front subframe, fit 2 new nuts and bolts in sequence (the driver side first), and tighten them to **90–110Nm**.
8. Locate the connecting rod of the front anti roll bar to the front anti roll bar, fit a new nut and tighten it to **55–65Nm**.

Caution: To prevent damage to components, use two spanners when loosening or tightening unions.

9. Fit the steering rack outer tie rod.

Steering Rack Outer Tie Rod Refit

10. Fit the front&middle bottom deflectors.

Bottom Deflector Refit

11. Locate the intermediate shaft universal joint to the steering rack input shaft, fit 1 new bolt and tighten it to **20Nm+120°**.

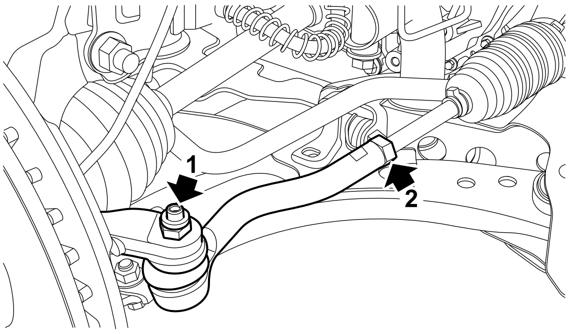
Steering Rack Outer Tie Rod

Remove

1. Remove the front wheels.

Wheels Remove

2. Remove and discard 1 nut (1) fixing the steering rack outer tie rod to the steering knuckle.
3. Disconnect the steering rack outer tie rod from the steering knuckle.
4. Mark the location of the locking nut, and loosen the locking nut (2) fixing the steering rack outer tie rod to the steering rack inner tie rod.



S2113577

5. Unscrew the steering rack outer tie rod from the steering rack inner tie rod.

Refit

1. Screw the steering rack outer tie rod to the mark position of the locking nut with the ball joint upward.
2. Tighten the locking nut to **63-73Nm**.
3. Locate the steering rack outer tie rod on the steering knuckle, fit a new nut and tighten it to **28-32Nm**.
4. Fit the front wheels.

Wheels Refit

5. Check the wheel alignment.

Wheel Alignment Check

6. Adjust the wheel alignment.

Wheel Alignment Adjustment

7. Perform a self-learning for the EPS module. Refer to Module Self-learning and Programming Manual, "Electric Power Steering (**EPS**) Module".

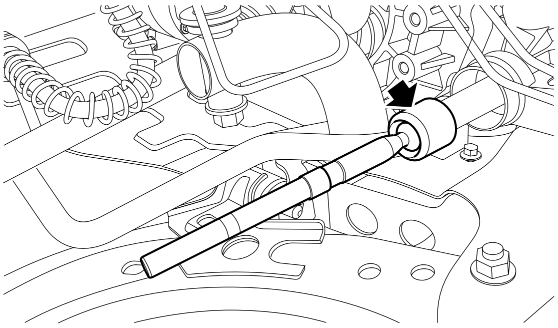
Steering Rack Inner Tie Rod

Remove

1. Remove the steering rack gaiter.

☞**Steering Rack Gaiter Remove**

2. Unscrew the steering rack inner tie rod from the steering rack and disconnect the connection.



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3. Remove the steering rack inner tie rod.

Refit

1. Locate the steering rack inner tie rod to the steering rack and use a tool to tighten the steering rack inner tie rod to **70-80Nm**.
2. Fit the steering rack gaiter.

☞**Steering Rack Gaiter Refit**

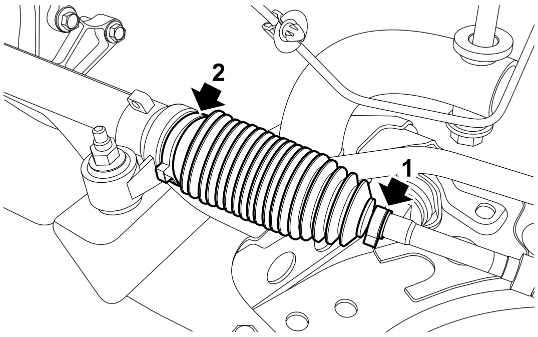
Steering Rack Gaiter

Remove

1. Remove the steering rack outer tie rod.

☞**Steering Rack Outer Tie Rod Remove**

2. Remove and discard the outer gaiter clamp (1) of the steering rack.
3. Remove and discard the inner gaiter clamp (2) of the steering rack.



S2113575

4. Unscrew the locking nut from the steering rack inner tie rod and pull out the steering rack gaiter.

Refit

1. Screw the locking nut and fit the steering rack gaiter onto the steering rack. Ensure that the steering rack gaiter is located in the steering rack groove.
2. Fit the new inner gaiter clamp of the steering rack to the steering rack gaiter, and secure it.
3. Fit the new outer gaiter clamp of the steering rack to the steering rack gaiter, and secure it.
4. Fit the steering rack outer tie rod.

☞**Steering Rack Outer Tie Rod Refit**

Upper Steering Column Assembly

Remove

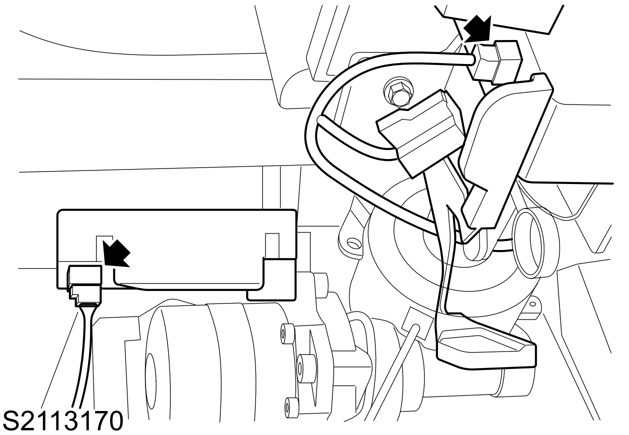
1. Disconnect the battery negative.
2. Remove the steering wheel combination switch.

☞**Steering Wheel Combination Switch Remove**

3. Remove the driver instrument panel lower trim panel.

☞**Driver Instrument Panel Lower Trim Panel Remove**

4. Disconnect the **EPS** module connector.



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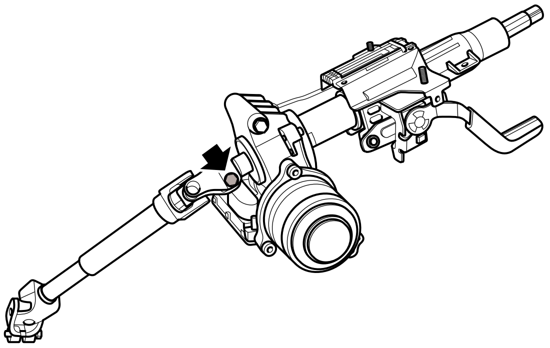
5. Remove 1 bolt fixing the intermediate shaft on upper steering column, and dispose it.



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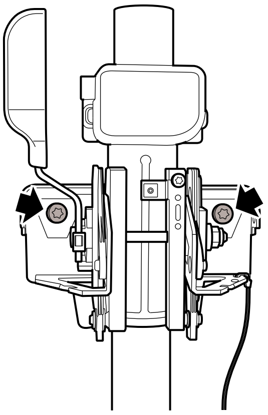
6. Remove 3 bolts fitting the steering column to the instrument panel beam assembly.



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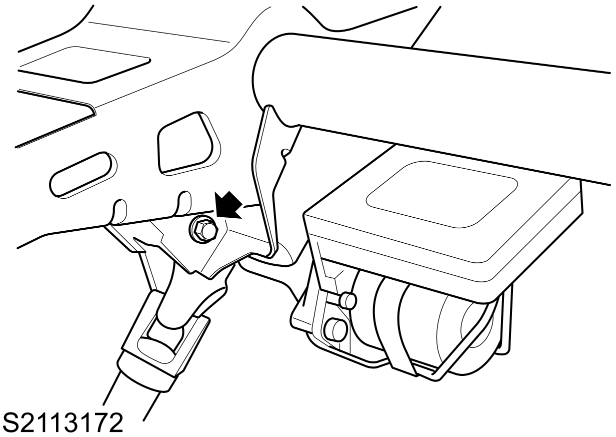


S2113172

7. Remove the upper steering column assembly.
8. Fix the upper steering column to the drilling machine, drill a small hole in the retaining screw head of the steering column lock, choose a broken screw extractor with an appropriate diameter to rotate the screw out, and do not damage adjacent parts.
9. Separate steering column lock and upper steering column.

Refit

1. Fix the electronic steering column lock module on steering column, refit 2 new bolts, tighten to **13-15Nm** and twist off the bolt head.
2. Fix the upper steering column assembly on instrument panel cross bream, refit 3 bolts in the order of "below-left-right", tighten the top two bolts to **19-25Nm**and the bottom bolt to **22Nm+45°**.
3. Fix the intermediate shaft on upper steering column, refit 1 new bolt, and tighten it to **20Nm+120°**.
4. Connect the **EPS** module connector.
5. Connect the electronic steering column lock module connector.
6. Refit the driver instrument panel lower trim panel.

☞**Driver Instrument Panel Lower Trim Panel Refit**

7. Refit the steering wheel combination switch.

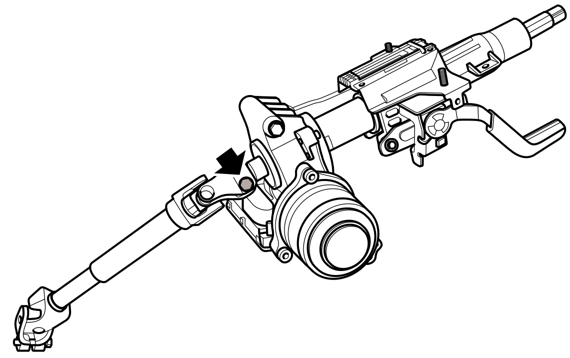
☞**Steering Wheel Combination Switch Refit**

8. Connect the battery negative.
9. Learn the electric power steering module. Refer to Module Self-learning and Programming Manual - Electric Power Steering (**EPS**) Module.

Intermediate Shaft

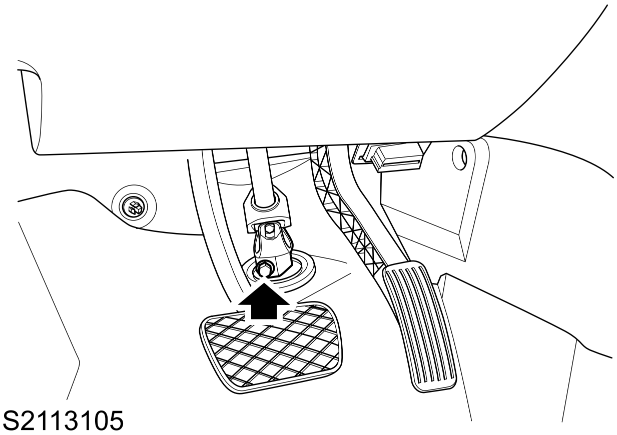
Remove

1. Maintain the vehicle wheel in the front to lock the steering wheel.
2. Remove 1 bolt fixing the upper steering column to the intermediate shaft and discard it.



S2113195

3. Remove 1 bolt fixing the intermediate shaft to the steering rack and discard it.



S2113105

4. Remove the intermediate shaft.

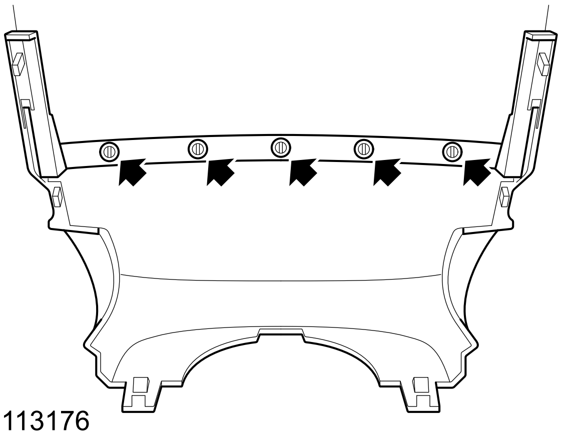
Refit

1. Position the intermediate shaft on upper steering column and steering rack.
2. Connect the intermediate shaft and upper steering column with a new bolt, and tighten to **20Nm+120°**.
3. Connect the intermediate shaft and steering rack with a new bolt, and tighten to **20Nm+120°**.

Steering Column Trim Cover

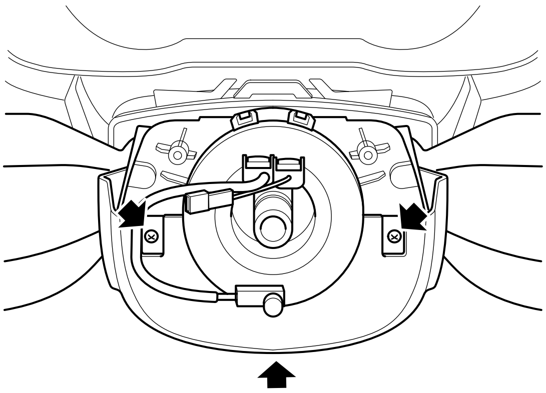
Remove

1. Slightly separate the upper trim cover from the lower trim cover with a screwdriver.
2. Remove the fixing buckle connecting the steering column upper trim cover to fascia, and remove the steering column upper trim cover.
3. Remove the steering column upper trim cover.



S2113176

4. Slightly separate the upper trim cover from the lower trim cover with a screwdriver.
5. Remove 3 screws fixing the steering column lower trim cover onto the steering column.



S2113175

6. Release the steering column to the lowermost position, and remove the steering column lower trim cover.

Refit

1. Position the steering column lower trim cover to the steering column upper trim cover.
2. Turn the steering wheel left and right to the right position, fit 2 screws fixing the steering column lower trim cover to the combination switch and tighten them.
3. Fit 1 screw fixing the steering column lower trim cover to the steering column and tighten it.
4. Fix the instrument panel IPK frame to the steering column upper trim cover, and press the clip in place.

5. Fix the steering column upper trim cover to the steering column lower trim cover, and press the clip in place.

Steering Wheel Positioning Adjustment

Adjustment

1. If the steering wheel is misaligned in a clockwise direction:
   a. Loosen the right locking nut.
   b. Rotate the right inner tie rod shaft to the left one hexagonal flat at a time.
   c. Tighten the right locking nut to **63-73Nm**.
   d. Loosen the left locking nut.
   e. Rotate the left inner tie rod shaft to the left one hexagonal flat at a time.
   f. Tighten the left locking nut to **63-73Nm**.
2. If the steering wheel is misaligned in a anticlockwise direction :
   a. Loosen the left locking nut.
   b. Rotate the left inner tie rod shaft to the right one hexagonal flat at a time.
   c. Tighten the left locking nut to **63-73Nm**.
   d. Loosen the right locking nut.
   e. Rotate the right inner tie rod shaft to the right one hexagonal flat at a time.
   f. Tighten the right locking nut to **63-73Nm**.
3. Repeat 1 or 2 until wheels face straight ahead and the steering wheel is at central position.

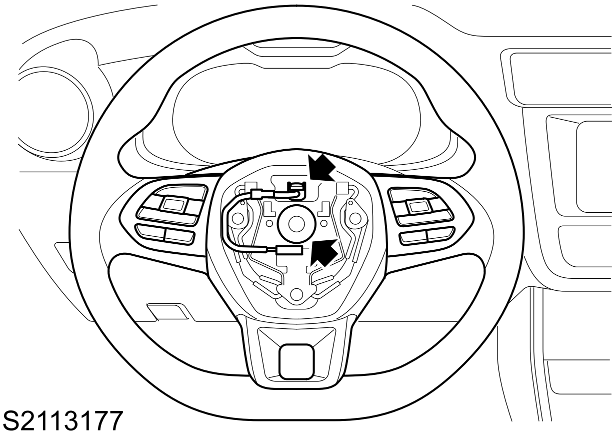
Steering Wheel Assembly

Remove

1. Disconnect the battery negative.
2. Remove the steering wheel safety airbag.

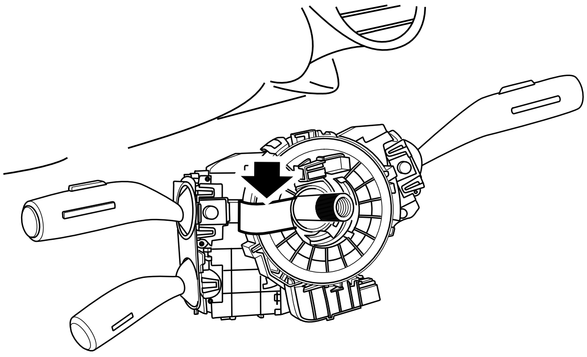
☞**Steering Wheel Airbag Remove**

3. Put the steering wheel in a centralised position, and keep the vehicle wheel in a straight ahead position.
4. Disconnect the steering wheel harness connector.
5. Prevent the steering wheel from rotating and loosen the bolt fixing the steering wheel on steering column, and remove the bolt until the steering wheel is fully loosened from the steering column.



S2113177

6. Remove the steering wheel assembly from steering column.
7. Stick tape along the edge of column lift lever combination switch in order to retain the correct refit position.



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Refit

1. Remove the adhesive tape for steering column lifting lever combination switch.
2. Ensure the wheels are in a straight and refit the steering wheel on steering column according to the mark.
3. Fix the steering wheel on steering column, refit 1 bolt, tighten to **60–70Nm** and check the torque.
4. Connect the steering wheel harness connector.
5. Refit the steering wheel safety airbag.

☞**Steering Wheel Airbag Refit**

6. Connect the battery negative.

Steering Wheel Molding

Remove

1. Disconnect the battery negative.
2. Remove the steering wheel safety airbag.

☞**Steering Wheel Airbag Remove**

3. Disconnect the steering wheel harness connector.
4. Release the clip slightly, and release the trim strip assembly from steering wheel.
5. Remove the steering wheel trim moulding.

Refit

1. Fix the steering wheel trim panel on steering wheel, and tighten it.
2. Connect the steering wheel harness connector.
3. Refit the steering wheel safety airbag.

☞**Steering Wheel Airbag Refit**

4. Connect the battery negative.

Electric Steering Column Lock

Remove

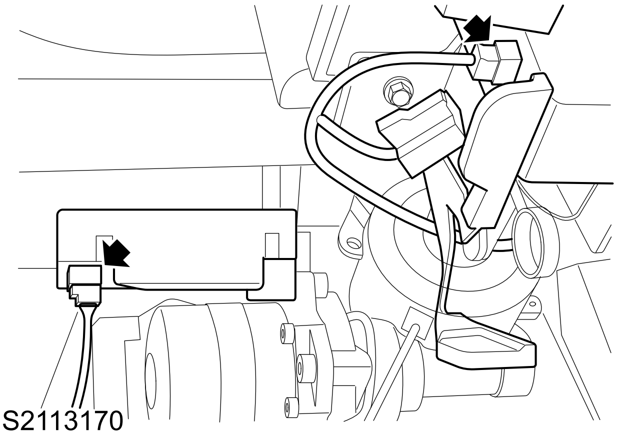
1. Remove the steering wheel combination switch.

☞**Steering Wheel Combination Switch Remove**

2. Remove the lower instrument panel assembly.

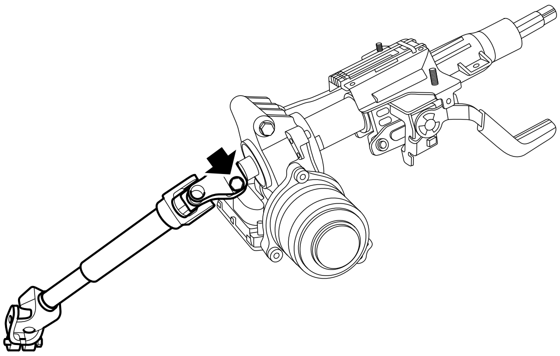
☞**Driver Side Lower Trim Panel Assembly Remove**

3. Disconnect the connectors of the **EPS** module and electric steering column lock.



S2113170

4. Remove and discard 1 bolt fixing the intermediate shaft to the upper steering column.



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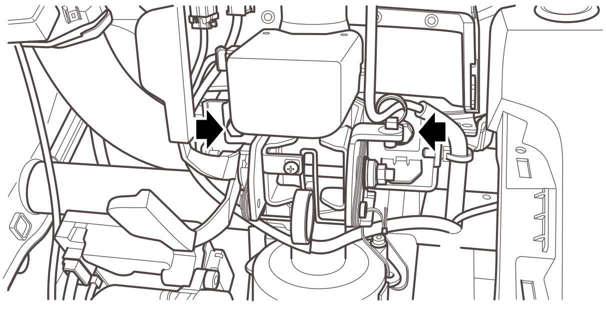
5. Remove and discard 3 bolts fixing the steering column to the instrument panel beam assembly.



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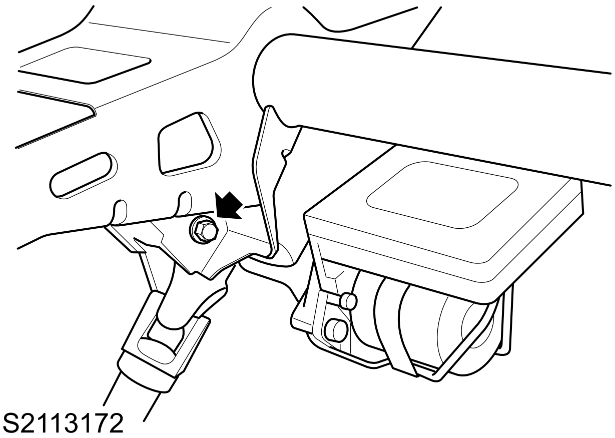


S2113172

6. Remove the upper steering column assembly.
7. Fix the upper steering column assembly to the drilling machine, drill small holes at the head of the bolts of the steering column lock, and select the appropriate tool to rotate the bolts out, so as not to destroy the adjacent parts.
8. Separation of steering column lock and upper steering column.

Refit

1. Fix the steering column lock to the upper steering column, install new bolts, and tighten to**13-15Nm**.
2. Fix the upper steering column assembly on instrument panel cross bream, refit 3 bolts in the order of "below-left-right", tighten the top two bolts to **19-25Nm**and the bottom bolt to **22Nm+45°**.
3. Fix the intermediate shaft to the upper steering column, fit 1 new bolt and tighten it to **20Nm+120°**.
4. Connect the connectors of the **EPS** module and electric steering column lock.
5. Fit the lower instrument panel assembly.

☞**Driver Side Lower Trim Panel Assembly Refit**

6. Fit the steering wheel combination switch.

☞**Steering Wheel Combination Switch Refit**

7. Perform a self-learning for the **ESCL** module. Refer to Self-learning and Programming Manual, "Electric Steering Column Lock".

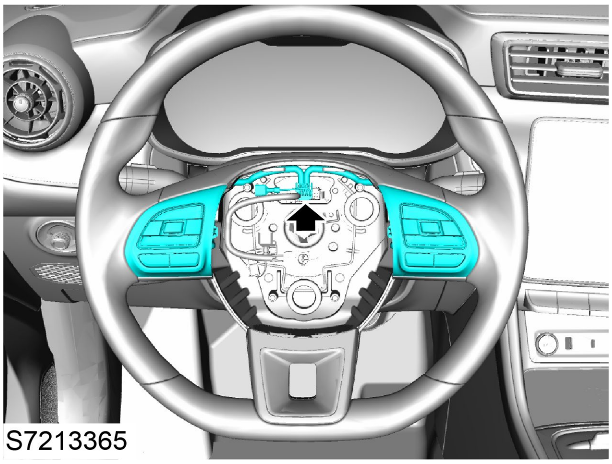
Steering Wheel Multifunction Switch

Remove

1. Disconnect the negative battery cable.
2. Remove the steering wheel airbag.

☞**Steering Wheel Airbag Remove**

3. Disconnect the connector of the steering wheel entertainment switch.



S7213365

4. Pry off the clip, and remove the steering wheel multifunction switch.

Refit

1. Connect the harness connector at the back of the steering wheel entertainment switch and fix the entertainment switch to the steering wheel.
2. Fit the steering wheel airbag.

☞**Steering Wheel Airbag Refit**

3. Connect the negative battery cable.

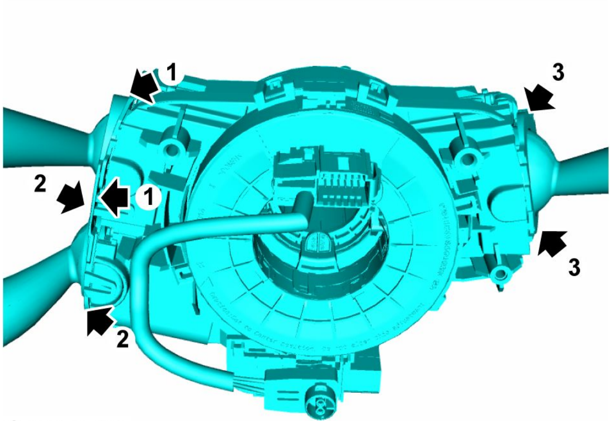
Steering Wheel Combination Switch

Remove

1. Disconnect the negative battery cable.
2. Remove the steering column shield.

Steering Column Shield Remove

3. Pry off the retaining clip of the stalk switch trim panel and remove the trim panel.
4. Remove 2 screws (3) fixing the wiper stalk switch to the clock spring, remove the wiper stalk switch and disconnect the harness connector.
5. Remove 2 screws (1) fixing the light stalk switch to the clock spring, remove the light stalk switch and disconnect the harness connector.
6. Remove 2 screws (2) fixing the cruise control stalk switch to the clock spring, remove the cruise control stalk switch and disconnect the harness connector.



S4613542

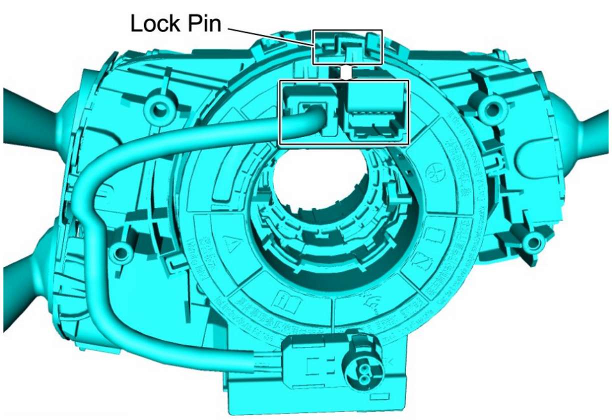
7. Remove the steering wheel assembly.

Steering Wheel Assembly Remove

8. Fix the clock spring and bracket with tapes, ensure it will not move left and right and is always in the centre.
9. Remove 1 screw fixing the clock spring to the steering column, disconnect the harness connector and remove the clock spring. Be careful not to damage the locating tape.

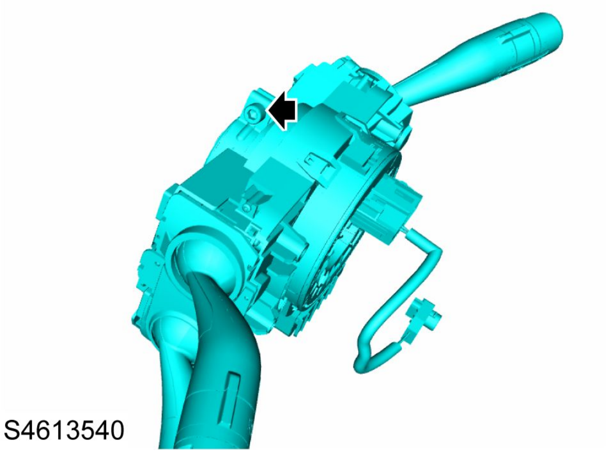
Refit

1. Before fitting, ensure that the red locating pin of the clock spring is not removed or damaged and the front wheels face the front.
2. Ensure the clock spring to be fitted is in the centre, if it is not, gently rotate the rotor counterclockwise to the end, then turn it clockwise for about 2.7 circles. Align the connector clip with the Lock Pin position (this location is the centre).



S4113498

3. Connect the harness connector of the clock spring.
4. Fix the clock spring to the steering column, fit 1 screw, tighten it to **5–6Nm**, check the torque, and ensure the combination switch assembly is not loose.



S4613540

5. Fit the steering wheel assembly.

Steering Wheel Assembly Refit

6. Connect the harness connector of the stalk switch.
7. Fix the stalk switch to the clock spring, fit and tighten 6 screws (4 screws for vehicles without cruise control function).
8. Fit the stalk switch trim panel and snap it into place.
9.
10. Fit the steering column shield.

Steering Column Shield Refit

11. Connect the negative battery cable.
12. Operate the electric power steering module (EPS). Refer to Module Self-learning and Programming Manual, "Electric Power Steering Module (EPS)".
13. Check the system, rotate each lever of the combination switch and check for correct operation.
14. Check if the buttons of the entertainment switch on the steering wheel for correct operation.

Wheel Alignment

Specifications

Torque

Description	Value
Nuts-Steering rack outer tie rod	63-73Nm

Service Procedures

Wheel Alignment Check

Steering and vibration complaints are not always the result of improper alignment. One possible cause is wheel and tire imbalance, and another possibility is tyre off-track due to worn or improperly manufactured tires. Definition of vehicle off-track: Vehicle off-track refers to the magnitude of the force to be applied on the steering wheel to keep the vehicle running in straight line when it runs at a constant high speed on a typical straight road. Off-track is the vehicle deviation from a straight path on a level road without pressure on the steering wheel.

Before performing any adjustment affecting wheel alignment, perform the following inspections and adjustments in order to ensure correct alignment readings:

- Check tyres for proper air inflation or irregular wear.
- Check the radial runout of wheels and tyres.
- Check wheel bearings for excessive clearance or gap.
- Check ball joints and steering tie rod ends for looseness or wear.
- Check control arms and stabilizer bar for looseness or wear.
- Check the steering gear on the frame for looseness.
- Check struts/shock absorbers for wear, leakage or any noticeable noises.
- Check the vehicle trim height.
- Check the steering wheel for excessive drag or poor returnability due to stiffness or corrosion of linkage mechanism or suspension components.

Give consideration also to the condition of the equipment being used for the alignment. Follow the equipment manufacturer's instructions.

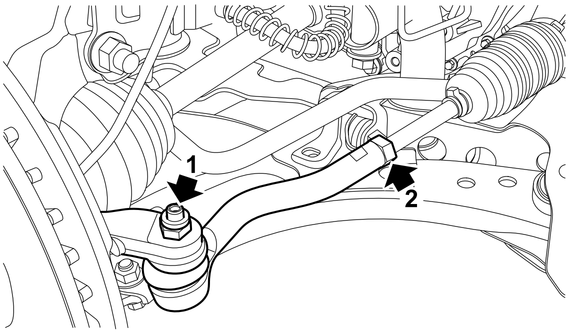
Satisfactory vehicle operation may occur over a wide range of alignment setting value. However, if the setting value exceeds the service allowable specifications, correct the alignment to the service recommended specifications.

Perform the following steps when measuring front and rear wheel alignment angles:

1. Fit the alignment equipment according to the manufacturer's instructions.
2. Conduct up and down vibration for the front and rear bumpers 3 times prior to checking the wheel alignment.
3. Measure the alignment angles and record the readings.
4. Adjust alignment angles to the specified value, if necessary.

Wheel Alignment Adjustment

1. Observe the readings indicated on the test equipment, and adjust the four-wheel alignment data according to the requirements.
2. Front wheel toe-in adjustment:
   a. Release the locking nut (2) of the steering outer tie rod.



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   b. Adjust the steering outer tie rod to set the front wheel alignment parameter to the specified value.
   c. Tighten the locking nut to **63-73Nm**.
   d. For the other side, repeat the above steps.

Front Suspension

Specifications

Torque

Description	Value
Nuts-Front lower control arm rear bushing to front subframe	(81–99) Nm+ (175–185) °
Bolt-Front lower control arm front bushing to front subframe	(81–99) Nm+ (85–95) °
Nut-Front lower control arm ball joint to front steering knuckle	50-65Nm
Nuts-Front lower control arm outer ball to front lower control arm	(81-99) Nm+ (85-95) °
Nut-Front shock absorber top nut	65–75Nm
Nuts-Front shock absorber assembly to body	55-65Nm
Nut-Front anti-roll bar links to front damper	55-65Nm
Bolts-Front shock absorber assembly to steering knuckle	140-170Nm
Bolts-Front anti-roll bar to front subframe	55-65Nm
Bolt- Steering gear to subframe	70Nm+90°
Bolts-Right mount onto subframe	90-110Nm
Bolts-Front mount onto subframe	(81–99) Nm+ (85–95) °
Bolts-Rear mount bracket to subframe	90-110Nm
Bolts-Front subframe to body	(135-165) Nm+ (85-95) °
Bolt-ESS Water pump to Bracket	4–6Nm
Nut-EDS water pump bracket to body	7-10Nm
Nut-Steering outer tie rod to steering knuckle	(28-32) Nm
Nut-Front anti-roll bar links to font anti-roll bar	55-65Nm
Bolts-Bumper to subframe	40–50Nm
Nut-front drive shaft	345–375Nm
Bolt- Steering column intermediate shaft to Steering	20Nm+120°
Bolts-Front anti-roll bar to front subframe	55-65Nm
Nut-Front anti-roll bar links to front anti-roll bar	55–65Nm
Nut-Front anti-roll bar links to front shock absorber assembly	50–65Nm
Bolts-Front wheel hub bearing assembly to front steering knuckle	(63–77) Nm+ (85–95) °
Nut-drive shaft	225–275Nm
Bolts- Front wheel carrier to Front damper assembly	140–170Nm
Nuts-Steering outer tie rod to steering arm	28-32Nm
Bolts-Front Wheel speed sensor to steering arm	7–10Nm

Service Procedures

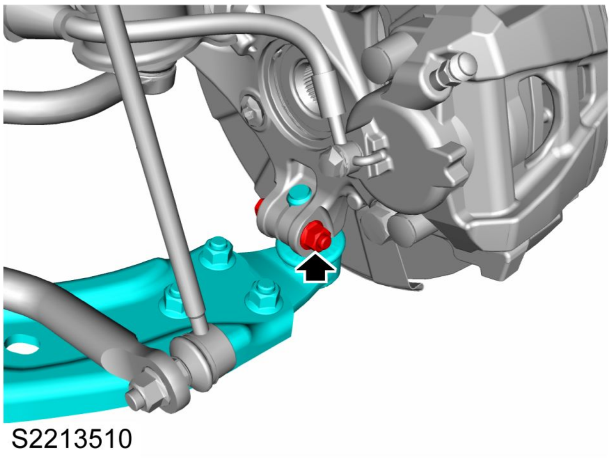
Front Low Control Arm Assembly

Remove

1. Remove the front wheels.

☞**Wheels Remove**

2. Remove 1 nut and bolt fixing the front lower control arm outer ball joint to the steering knuckle, discard the nut and disconnect the connection.



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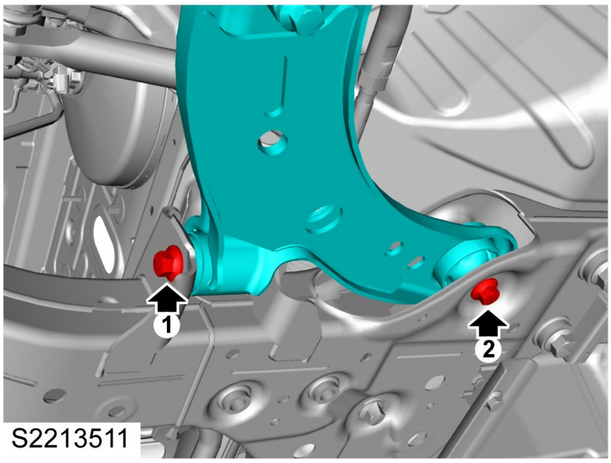
3. Remove 1 bolt (1) fixing the front lower control arm assembly front bushing to the front subframe and discard it.
4. Remove 1 bolt and nut (2) fixing the front lower control arm assembly rear bushing to the front subframe and discard them.



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5. Remove the front lower control arm assembly.

Refit

1. Locate the front lower control arm assembly rear bushing to the front subframe, fit 1 new bolt and nut, and tighten them to **(81–99) Nm+ (175–185)** °.
2. Locate the front lower control arm assembly front bushing to the front subframe, fit 1 new bolt, and tighten it to **(81–99) Nm+ (85–95)** °.
3. Locate the front lower control arm outer ball joint to the steering knuckle, fit 1 bolt and 1 new nut and tighten them to **50-65Nm**.
4. Fit the front wheels.

☞**Wheels Refit**

5. Check the four-wheel alignment parameters and perform adjustment if necessary.

☞**Four-wheel Alignment**

Front Lower Control Arm Outer Ball Joint

Remove

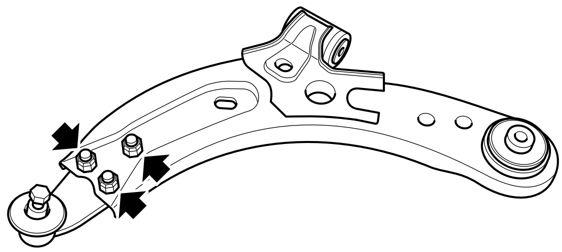
1. Remove the front wheel.

☞**Wheels Remove**

2. Lift the vehicle to an appropriate height using the suitable jacking device.
3. Remove the front lower control arm assembly.

☞**Front Lower Control Arm Assembly Remove**

4. Remove 3 bolts and nuts fixing the front lower control arm outer ball joint to the front lower control arm. Dispose the bolts and the nuts.



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5. Remove the outer ball joint.

Refit

1. Locate the front lower control arm outer ball joint to the front lower control arm. Fit 3 new bolts and nuts and tighten them to **(81-99) Nm+ (85-95)** °.
2. Refit the front lower control arm assembly.

☞**Front Lower Control Arm Assembly Refit**

3. Lower the vehicle to an appropriate height.
4. Refit the front wheel.

☞**Wheels Refit**

5. Lower the vehicle.

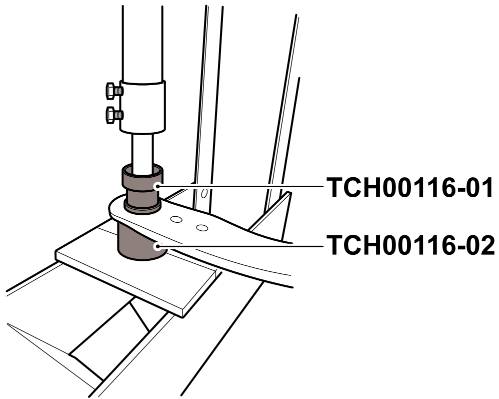
Front Lower Control Arm Rear Bush

Remove

1. Remove the front lower control arm assembly.

☞**Front Lower Control Arm Assembly Remove**

2. Press the rear bush out from the front lower control arm assembly by pressing machine and the special tool **TCH00116**



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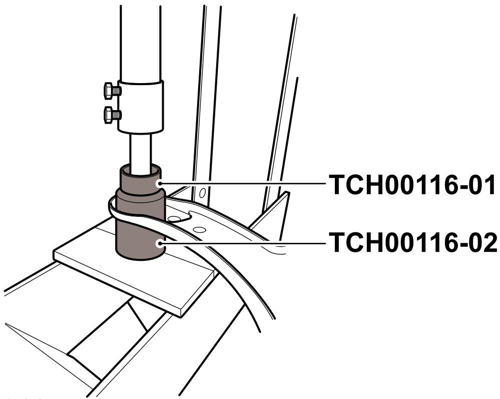
3. Remove the special tool from rubber bush.

Refit

1. Clean the concave notch of rubber bush.
2. Press the rubber bush into the front lower control arm using the special tool **TCH00116** and a pressing machine.



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3. Remove the special tool from the bush.
4. Refit the front lower control arm assembly.

☞**Front Lower Control Arm Assembly Refit**

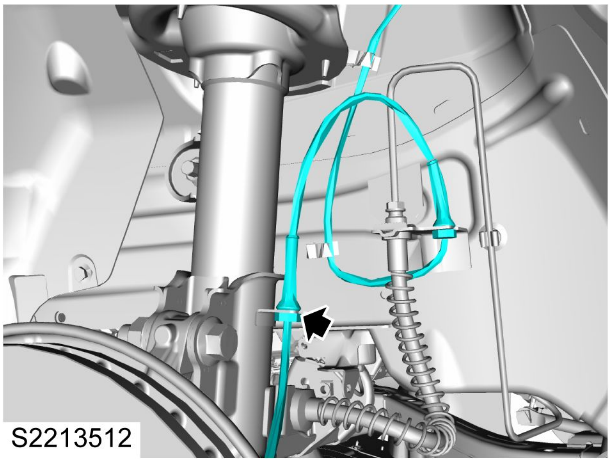
Front Shock Absorber Assembly

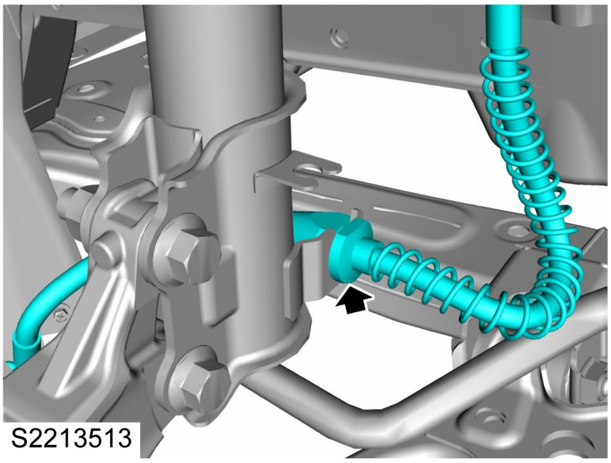
Remove

1. Remove the front wheels.

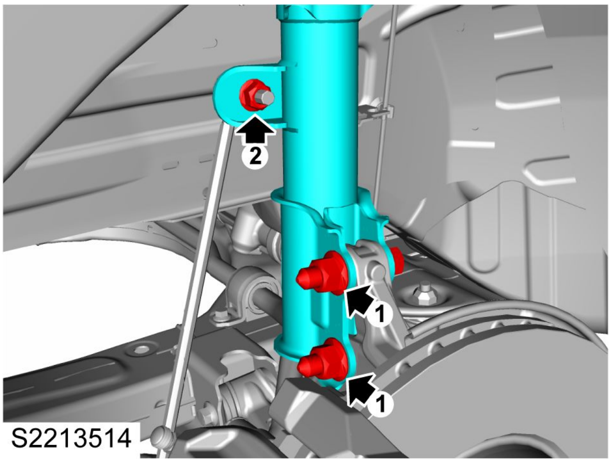
☞ **Wheels Refit**

2. Disconnect the wheel speed sensor harness and brake hose from the front shock absorber.





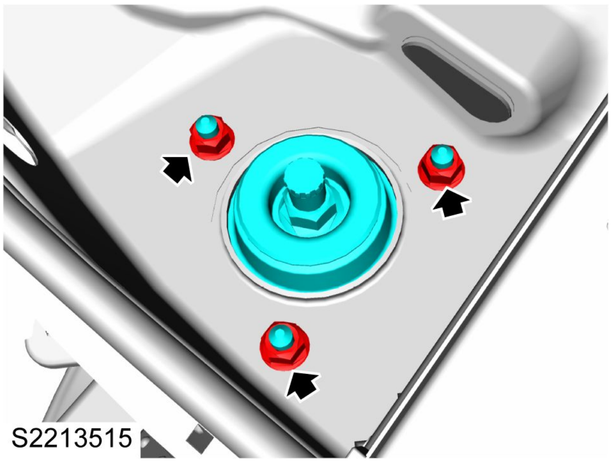
3. Support the steering knuckle and the brake disc with hydraulic lifting device.
4. Remove 2 nuts and bolts (1) fixing the front shock absorber assembly to the steering knuckle and discard them.
5. Remove 1 nut (2) fixing the front anti-roll bar link to the front shock absorber and discard it.



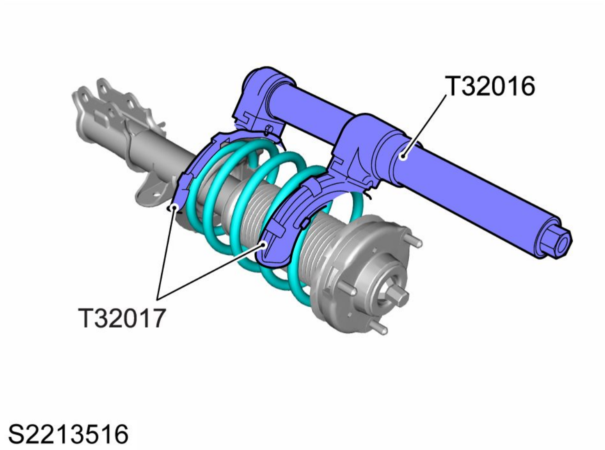
6. Remove the A/C air inlet grille assembly.

☞ **A/C Air Inlet Grille Assembly Remove**

7. Remove 3 nuts fixing the front shock absorber to the body and discard them.



8. Remove the front shock absorber assembly.
9. Remove the dust cover at the top of the front shock absorber.
10. Fix the spring compressor **T32016**and **T32017**to the front shock absorber spring, ensure the adapter of the spring compressor is properly fitted, and compress the spring.

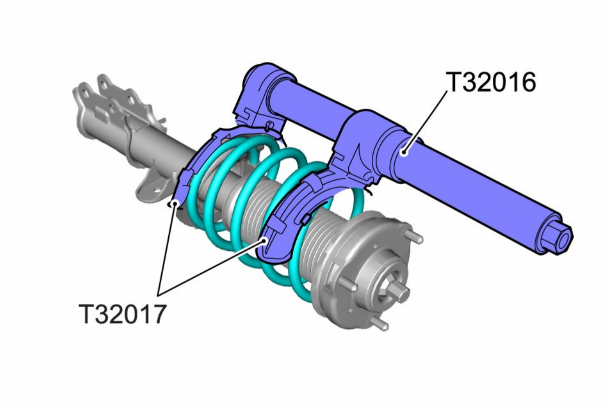


11. Lock the top of the front shock absorber with an Allen wrench, remove and discard the top nut with **TCH00117** and an open-end wrench.
12. Remove the top mount assembly, bearing and upper spring vibration isolator of the front shock absorber.
13. Remove the coil spring of front shock absorber and lower spring vibration isolator.
14. Remove the bump stop and the dust cover.
15. Release the pressure of coil spring, loosen the adapter from the spring compressor and remove the coil spring.

Refit

1. Check the front shock absorber strut and bearing for any sign of crack or damage.
2. Check the dust cover and bump stop for any sign of aging or damage.

3. Clean the front shock absorber strut and bump stop.
4. Fit the bump stop and the dust cover to the front shock absorber strut.
5. Fit the lower and spring vibration isolators and the spring to the front shock absorber strut.
6. Apply **T32016** and **T32017** to compress the spring.



S2213516

7. Ensure the correct relative position for installation, and fit the bearing and the top mount assembly to the front shock absorber strut.
8. Fit a new nut at the top of the front shock absorber.
9. Lock the top of the front shock absorber with an Allen wrench and tighten the new nut to **65–75Nm** with **TCH00117** and an open-end wrench.
10. Release the elasticity of the spring, loosen the adapter of the spring compressor and take out the spring compressor.
11. Fit the dust cover of the front shock absorber.
12. Clean the mating surfaces of the front shock absorber assembly and the body.
13. Locate the front shock absorber assembly to the body, fit 3 new nuts and tighten them to **55-65Nm**.
14. Fit the A/C air inlet grille assembly.

☞**A/C Air Inlet Grille Assembly Refit**

15. Clean the front anti-roll bar link and locate it to the front shock absorber assembly. Clamp the front anti-roll bar link with a tool to lock the ball joint of the link, fit 1 new nut and tighten it to **55-65Nm**.
16. Locate the front shock absorber assembly to the steering knuckle, fit 2 new bolts and nuts, and tighten them to **140-170Nm**.
17. Lower the hydraulic lifting device, and move it to the safety zone.
18. Fit the front wheel speed sensor harness and brake hose.
19. Fit the front wheels.

☞**Wheels Refit**

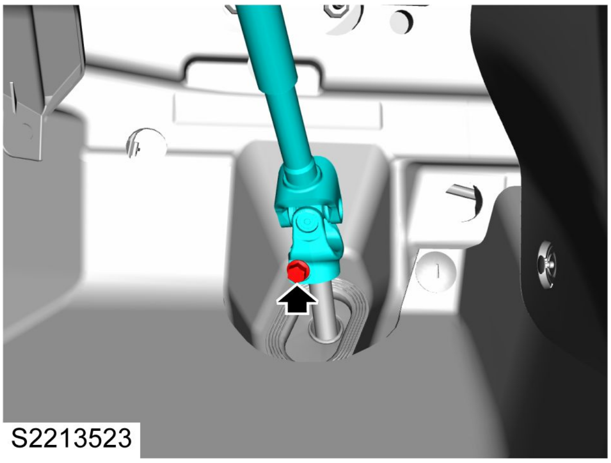
20. Check the wheel alignment.

☞**Four-wheel Alignment**

Full Frame Front Subframe

Remove

1. Remove and discard 1 bolt fixing the intermediate shaft universal joint to the steering rack input shaft.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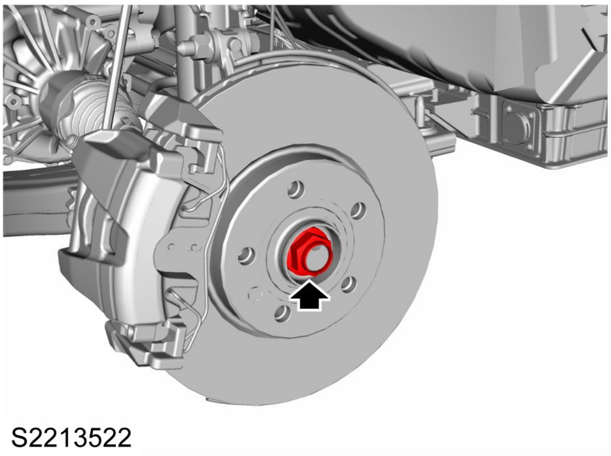
2. Remove the wheel centre trim cover, pry up the rear axle shaft nut locking device, and remove and discard the axle shaft nuts (both sides).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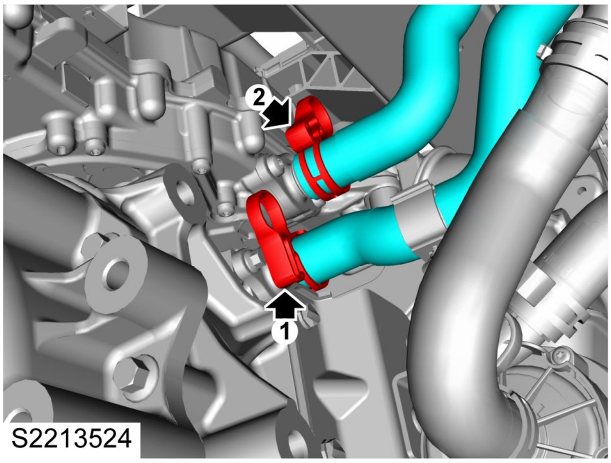
3. Remove the front wheels (both sides).

Wheels Refit

4. Drain the coolant.

Coolant Drain - PEB

5. Loosen the clamp (1), and disconnect the hose assembly - EDS to radiator from the EDS.
6. Loosen the clamp (2), and disconnect the hose assembly - CCU to EDS from the EDS.



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7. Remove the compressor bracket.

Compressor Bracket Refit

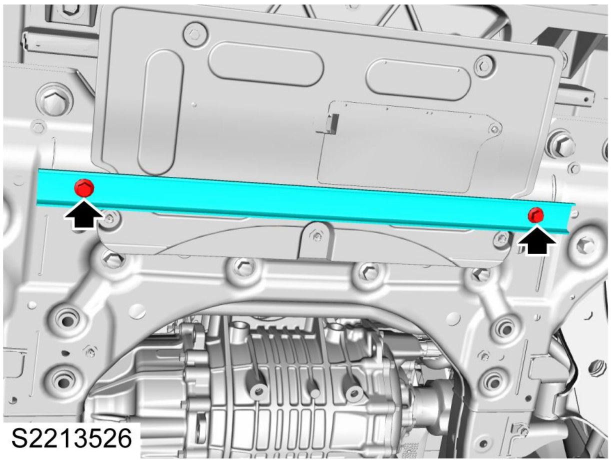
8. Remove the front, middle and bottom deflectors.

Front Bumper Remove

9. Remove the front lower control arm assemblies (both sides).

Front Lower Control Arm Assembly Refit

10. Remove and discard 2 bolts fixing the bumper bar to the full frame front subframe, and remove the bumper bar.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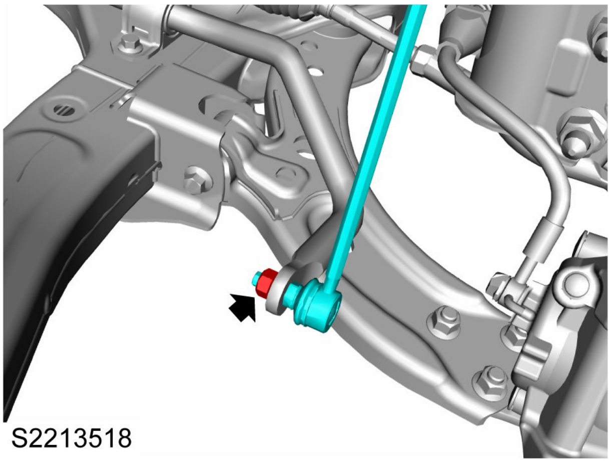
11. Remove 1 nut fixing the front anti-roll bar link to the front anti-roll bar and discard it (both sides).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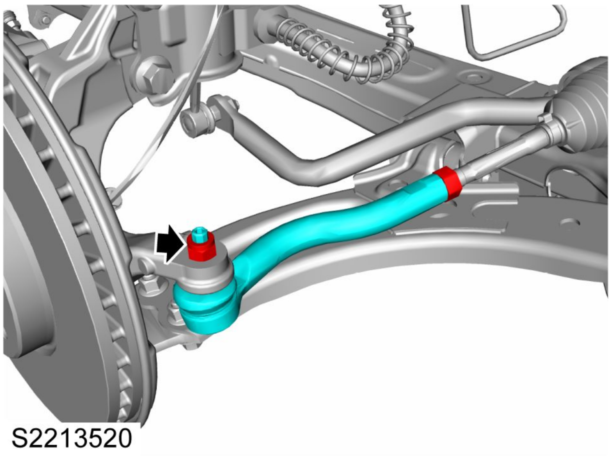
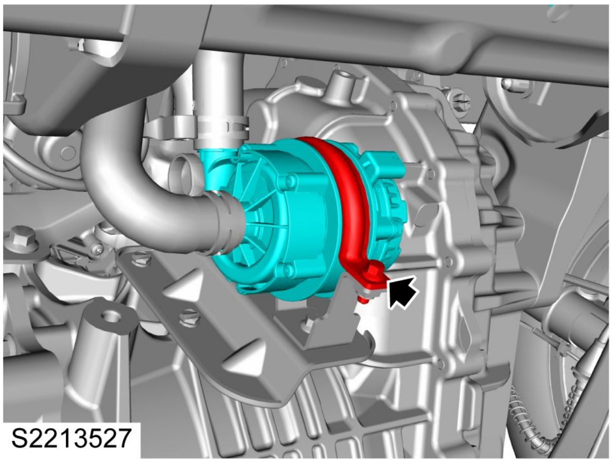
12. Remove the nuts (both sides) fixing the steering rack

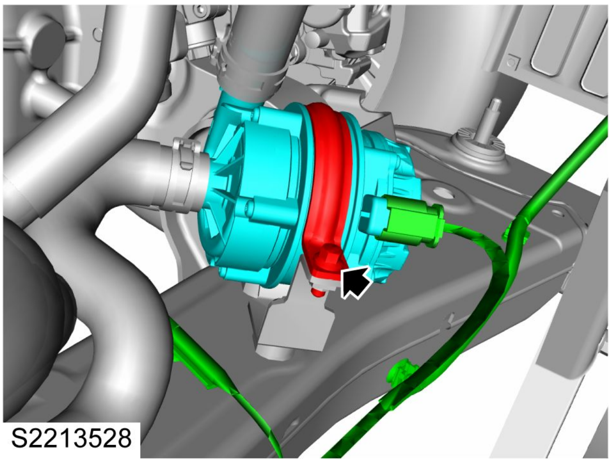
outer tie rod to the steering knuckle and discard them.



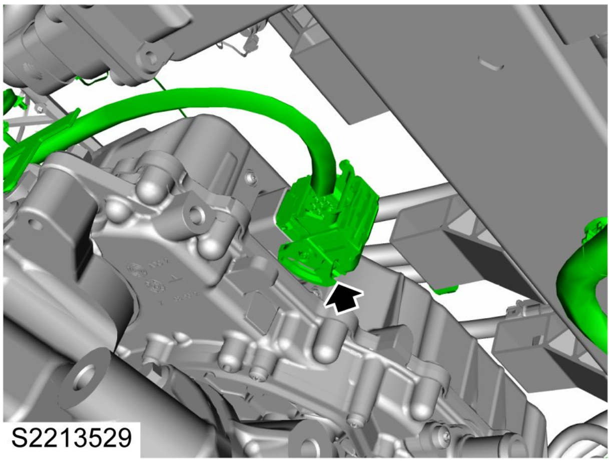
13. Pull the wheel hub outward and disengage one end of axle shaft from the wheel hub (both sides).
14. Disconnect the clip of EDS water pump harness connector.
15. Remove 1 bolt fixing the EDS water pump to the EDS water pump bracket, and set the EDS water pump assembly to an appropriate position.



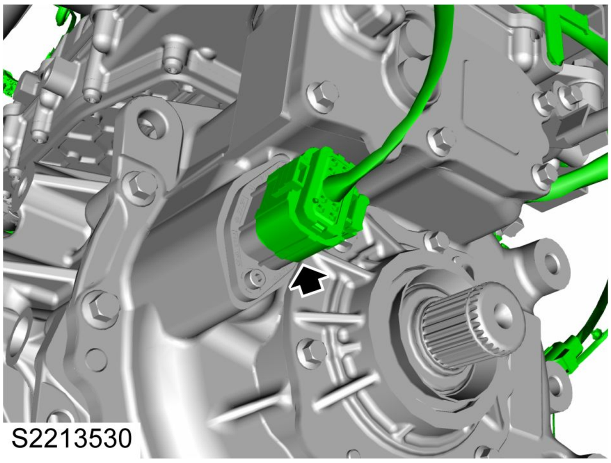
16. Disconnect the clip of **ESS** water pump harness connector.
17. Remove 1 bolt fixing the **ESS** water pump to the **ESS** water pump bracket, and move the **ESS** water pump to an appropriate position.



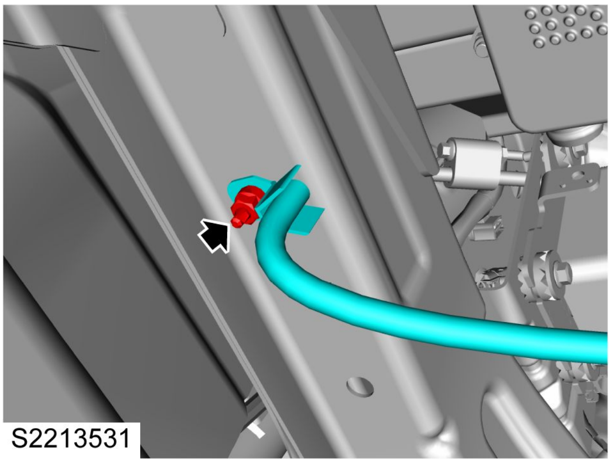
18. Disconnect the harness connector of the power electronic box and relevant harness clip.



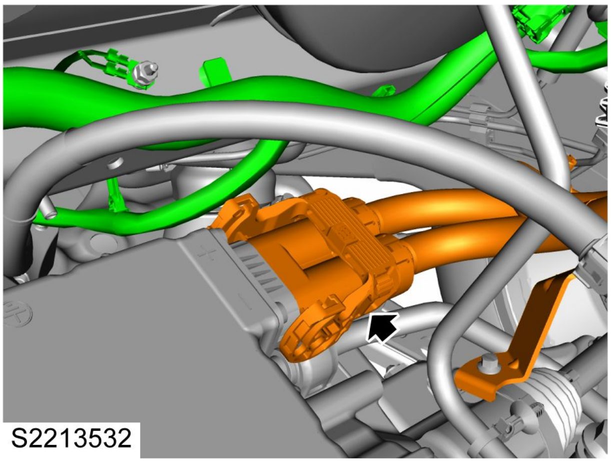
19. Disconnect the harness connector of the drive motor and relevant harness clip.



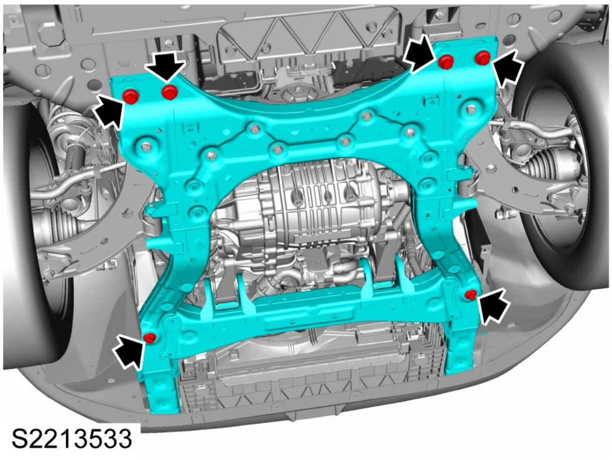
20. Remove 1 nut fixing the grounding wire to the longitudinal beam.



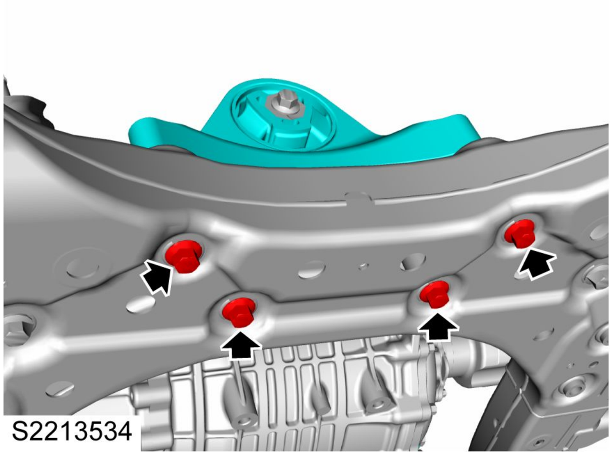
21. Disconnect the high voltage harness connector from the **PEB**.



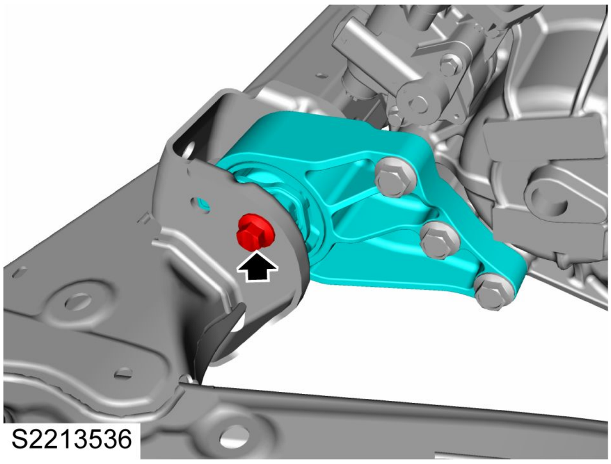
22. Support the full frame front subframe assembly and motor and mount assembly with hydraulic lifting device.
23. Remove 6 bolts fixing the full frame front subframe assembly to the body.



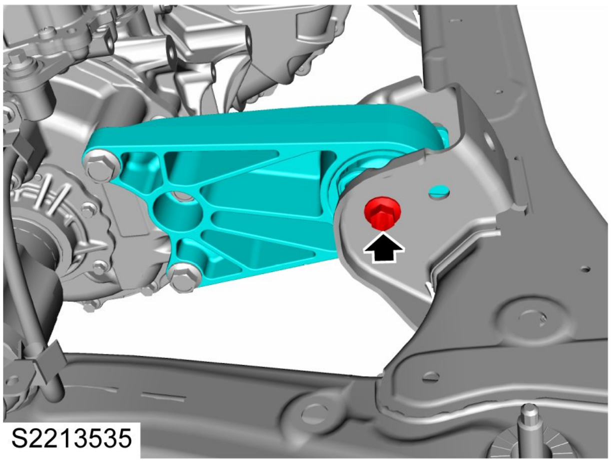
24. Slowly lower the hydraulic lifting device, to disengage the full frame front subframe assembly and motor and mount assembly from the body.
25. Use a hoist to lift the motor and mount assembly at an appropriate position.
26. Remove and discard 4 bolts fixing the rear mount bracket to the full frame front subframe.



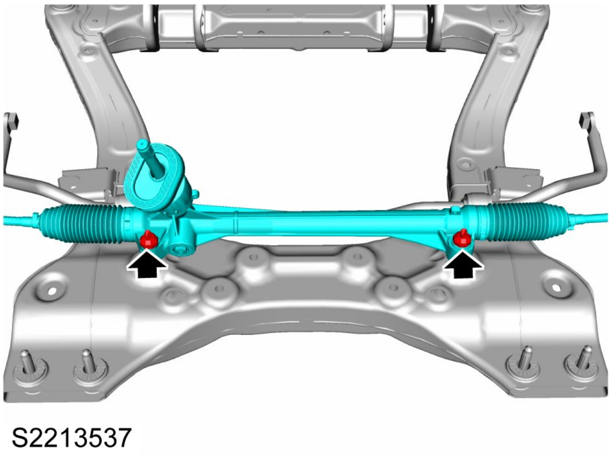
27. Remove and discard 1 bolt fixing the left mount to the full frame front subframe.



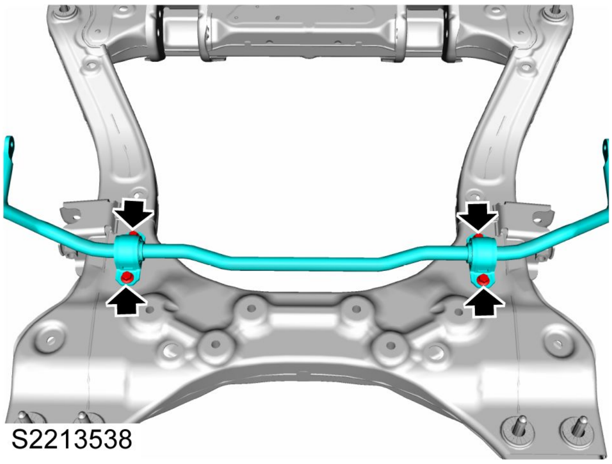
28. Remove and discard 1 bolt fixing the right mount to the full frame front subframe.



29. Remove and discard 2 bolts and nuts fixing the steering rack subassembly to the full frame front subframe, and remove the steering rack subassembly.



30. Remove and discard 4 bolts fixing the anti-roll bar to the full frame front subframe, and remove the front anti-roll bar.



31. Remove the full frame front subframe assembly.

Refit

1. Locate the front anti-roll bar to the full frame front subframe, fit 4 new bolts, and tighten them to **55-65Nm**.
2. Locate the steering rack subassembly to the full frame front subframe, fit 2 new bolts and nuts, and tighten them to **70Nm+90°** .
3. Fit 1 bolt fixing the right mount to the full frame front subframe, tighten it to **90-110Nm**, and check the torque.
4. Fit 1 bolt fixing the left mount to the full frame front subframe, tighten it to **(81–99) Nm+ (85–95) °**, and check the torque.
5. Fit 4 new bolts fixing the rear mount bracket to the full frame front subframe, tighten them to **90-110Nm**, and check the torque.
6. Move away the hoist to a safe area.
7. Support the full frame front subframe assembly and motor and mount assembly with hydraulic lifting device, fit 6 bolts locating the full frame front subframe assembly to the body, and tighten them to **(135-165) Nm+ (85-95) °**.
8. Lower the hydraulic lifting device, and move it to the safety zone.
9. Connect the high voltage harness connector to the **PEB**.
10. Fit 1 nut fixing the grounding wire to the longitudinal beam, and tighten it.
11. Connect the harness connector of the drive motor and relevant harness clip.
12. Connect the harness connector of the power electronic box and relevant harness clip.
13. Locate the **ESS** water pump to the **ESS** water pump bracket, fit 1 bolt and tighten it to **4–6Nm**.
14. Connect the **ESS** water pump harness connector and harness clip.
15. Locate the EDS water pump to the EDS water pump bracket, fit 1 bolt and tighten it to **7-10Nm**, and check the torque.
16. Connect the clip of EDS water pump harness connector.
17. Pull the wheel hub outward to allow the axle shaft to engage the wheel hub splines (both sides).
18. Locate the steering rack outer tie rod on the steering knuckle, fit new nuts (both sides) and tighten them to **(28-32) Nm**.
19. Locate the front anti-roll bar link to the front anti-roll bar, fit 1 new nut (both sides) and tighten it to **55-65Nm**.
20. Locate the bumper bar to the full frame front subframe, fit 2 new bolts, and tighten them to **40–50Nm**.
21. Fit the front lower control arm assemblies (both sides).

☞**Front Lower Control Arm Assembly Refit**

22. Fit the front, middle and bottom deflectors.

☞**Front Bumper Remove**

23. Fit the compressor bracket.

☞**Compressor Bracket Refit**

24. Connect the hose assembly - CCU to EDS to the EDS and secure it with clamps.
25. Connect the hose assembly - EDS to radiator to the EDS and secure it with clamps.
26. Refill the coolant.

☞**Coolant Refill - EDS**

27. Fit the front wheels (both sides).

☞**Wheels Refit**

28. Fit the new axle shaft nut locking device and tighten it to **345–375Nm**.
29. Lock the nut to the front right axle shaft, and fit the wheel centre trim cover.
30. Locate the steering intermediate shaft to the steering rack input shaft, fit 1 new bolt and tighten it to **20Nm+120°**.

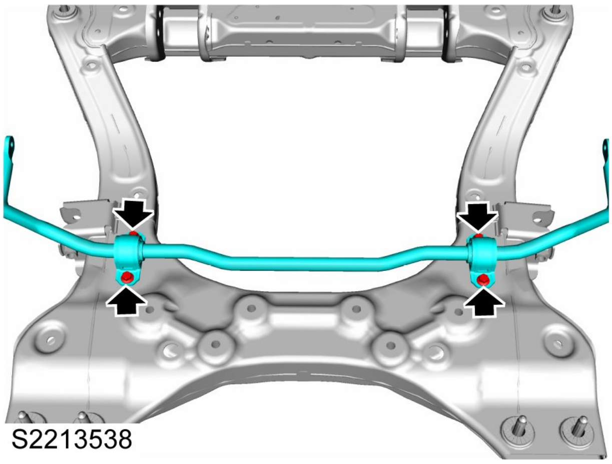
Front Anti-roll Bar

Remove

1. Remove the front bottom deflector.

☞**Front Bumper Remove**

2. Use a tool to lock the ball joint of the front anti-roll bar link, remove and discard the nuts (both sides) fixing the link to the anti-roll bar, and disconnect the anti-roll bar from the link.
3. Remove 4 bolts fixing the front anti-roll bar to the full frame front subframe, and discard them.



4. Take out the front anti-roll bar at an appropriate position, and remove the bushing clamp and the bushing.

Refit

1. Fit the front anti roll bar bushing and clamp.
2. Locate the front anti-roll bar to the full frame front subframe, fit and pre-tighten 4 bolts, and tighten them to **55-65Nm** in the sequence.
3. Locate the front anti-roll bar link to the anti-roll bar, use a tool to lock the ball joint of the link, fit new nuts (both sides) and tighten them to **55–65Nm**.
4. Fit the front bottom deflector.

☞**Front Bumper Remove**

5. Check and adjust the four-wheel alignment parameters.

☞**Wheel Alignment**

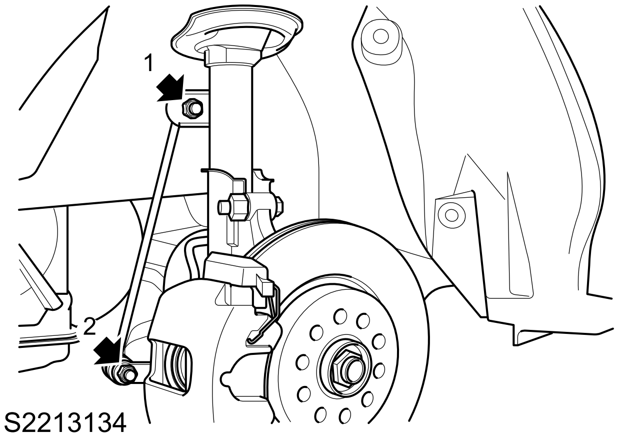
Front Anti-roll Bar Links

Remove

1. Remove the front wheel.

☞**Wheels Remove**

2. Lift the vehicle to an appropriate height using a suitable jacking device.
3. Use a tool to block the front anti-roll bar links ball joint to prevent it from turning. Remove 1 nut (1) fixing the front anti—roll bar links to the front shock absorber assembly and discard it.
4. Use a tool to block the front anti-roll bar links ball joint to prevent it from turning. Remove 1 nut (2) fixing the front anti—roll bar links to the front anti—roll bar and discard it.



5. Remove the front anti—roll bar links.

Refit

1. Locate the front anti-roll bar links to the front shock absorber assembly, refit 1 new nut, use a tool to block the links ball joint to prevent it from turning and tighten it to **50–65Nm**.

Caution: To prevent damage to components, use two spanners when loosening or tightening unions.

2. Locate the front anti-roll bar links to the front anti—roll bar, refit 1 new nut, use a tool to block the links ball joint to prevent it from turning and tighten it to **55–65Nm**.

Caution: To prevent damage to components, use two spanners when loosening or tightening unions.

3. Lower the vehicle to an appropriate height.
4. Refit the front wheel.

☞**Wheels Refit**

5. Lower the vehicle.

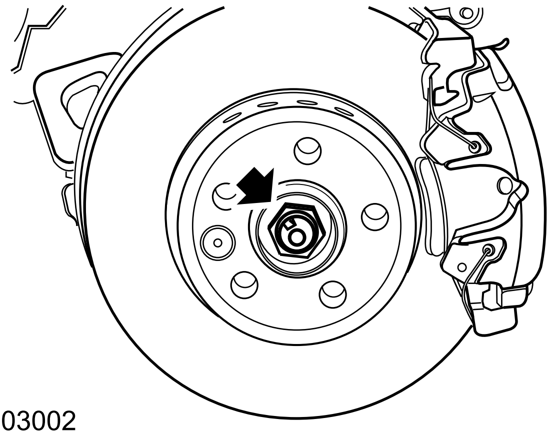
Front Wheel Hub Bearing Assembly

Remove

1. Remove the front wheels

Wheels Remove

2. Pry up the locking device of the front drive half-axle nut, and press down the brake pedal. Remove the front drive half-axle nut and discard it.

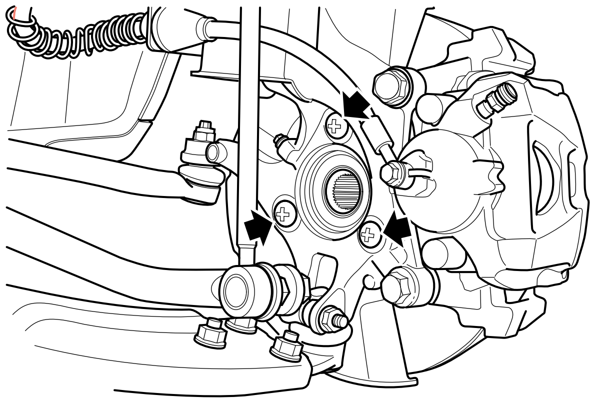


S303002

3. Remove the front brake disc guard plate.

Front Brake Disc Guard Plate Remove

4. Remove 3 bolts that fasten the front hub assembly to the steering knuckle and discard them.



S2213371

5. Remove the front hub assembly.

Refit

1. Locate the front hub assembly on the steering knuckle, install three new bolts, and tighten to **(63–77) Nm+ (85–95) °**。
2. Install front brake disc guard plate.

Front Brake Disc Guard Plate Refit

3. Locate the front drive half axle on the front hub assembly, install a new nut locking device, step on the brake pedal, and tighten the nut to **225–275Nm**。
4. Refit the front wheels

Wheels Refit

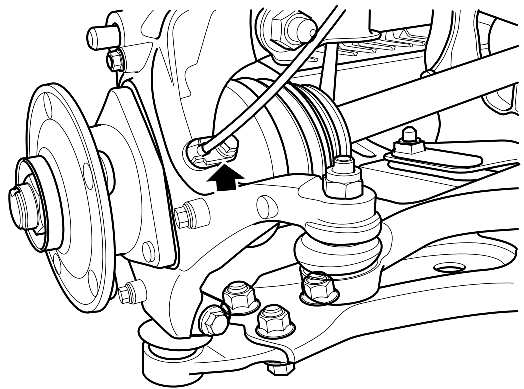
Front Steering Knuckle

Remove

1. Remove the front wheel hub assembly.

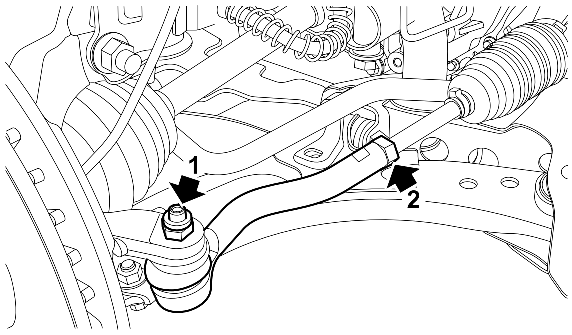
Front Wheel Hub Assembly Remove

2. Remove 1 bolt fixing the front wheel speed sensor to the steering knuckle.



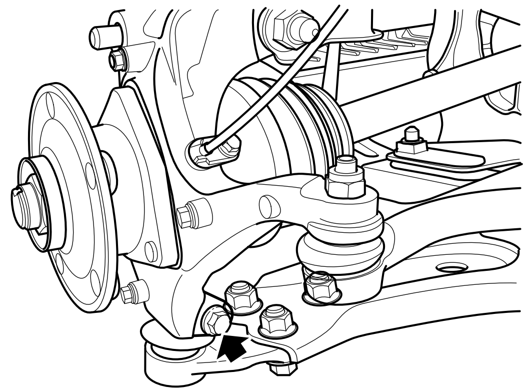
S2213373

3. Pull the front wheel speed sensor off the steering knuckle.
4. Remove and discard 1 nut (1) fixing the ball head of steering gear outer tie rod to the steering knuckle.



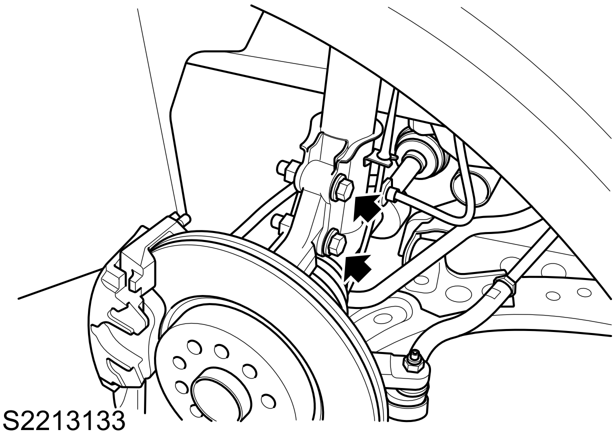
S2113577

5. Disconnect the steering gear outer tie rod from the steering knuckle.
6. Remove 1 bolt and nut fixing the ball joint of front lower swing arm assembly to the front steering knuckle, discard the nut, and disconnect the connection.



S2213372

7. Remove and discard 2 bolts and nuts fixing the front steering knuckle to the front shock absorber assembly, then disconnect the connection.



S2213133

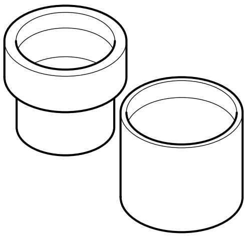
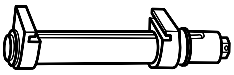
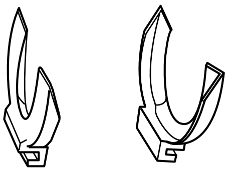
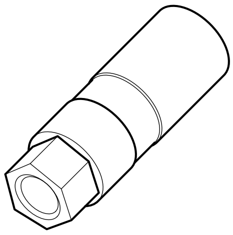
8. Remove the front steering knuckle.

Refit

1. Locate the front steering knuckle to the front shock absorber assembly, fit 2 new bolts and nuts, and tighten them to **140–170Nm**。
2. Locate the ball head of steering gear outer tie rod to the steering knuckle, fit 1 new nut and tighten it to **28-32Nm**。
3. Locate the front wheel speed sensor to the steering knuckle, fit 1 bolt and tighten it to **7–10Nm**。
4. Fit the front wheel hub assembly.

☞**Front Wheel Hub Assembly Refit**

Special Tools

Tool Number	Description	Picture
TCH00116	Remover and relpace cap rear lower arm bush	 TPT00116
T32016	Coil spring compressor	 T32016
T32017	Adaptor coil spring compressor	 T32017
TCH00117	Remover and replacer front damp big bolt	 TCH00117

Rear Suspension

Specifications

Torque

Description	Value
Bolt-Rear shock absorber assembly to rear torsion beam	140–170Nm
Bolts-Rear shock absorber assembly to body	55–65Nm
Bolts-Rear wheel hub bearing assembly to wheel carrier	（190-210）Nm+（85-95）°
Bolt-Rear wheel speed sensor to rear wheel support	7–10Nm
Nut-Rear wheel support to rear torsion beam	90-110Nm
Bolts-Rear damper to Rear torsion beam	140–170Nm
Bolts-Rear torsion beam to body	90–110Nm
Nuts-Rear wheel carrier to torsion beam	90–110Nm

Service Procedures

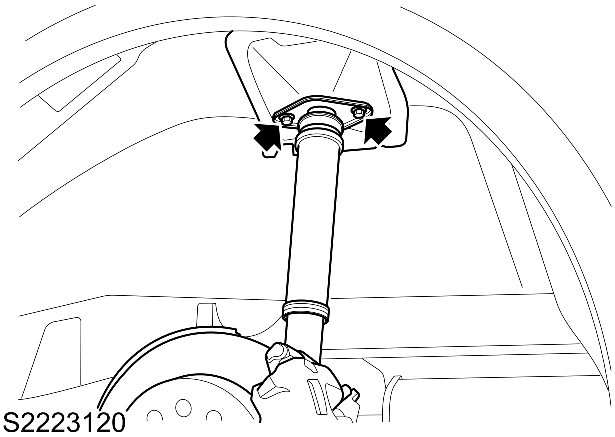
Rear Shock Absorber Assembly

Remove

1. Remove the rear wheels.

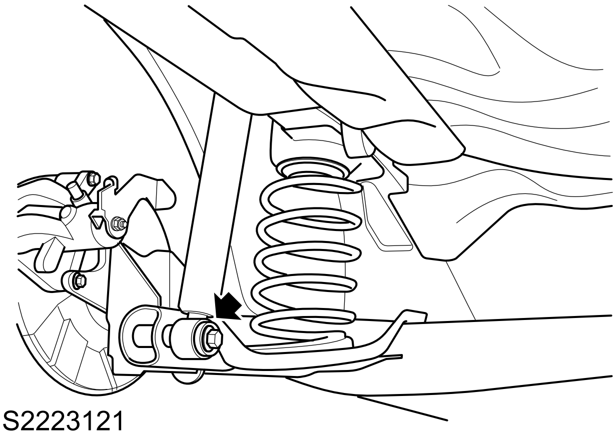
☞**Wheels Remove**

2. Raise the vehicle on a lift and support the torsion beam.
3. Remove and discard 2 bolts fixing the rear shock absorber assembly to the upper body.



S2223120

4. Remove and discard 1 bolt fixing the rear shock absorber assembly to the torsion beam.



S2223121

5. Remove the rear shock absorber assembly.

Refit

1. Pass the new bolt through the connecting bracket under the shock absorber into the torsion beam, and tighten it to **140–170Nm**.
2. Lower the vehicle to a height high enough to insert the upper shock absorber stud into the corresponding opening in the body, fit 2 new bolts and tighten them to **55–65Nm**.
3. Fit the rear wheels.

☞**Wheels Refit**

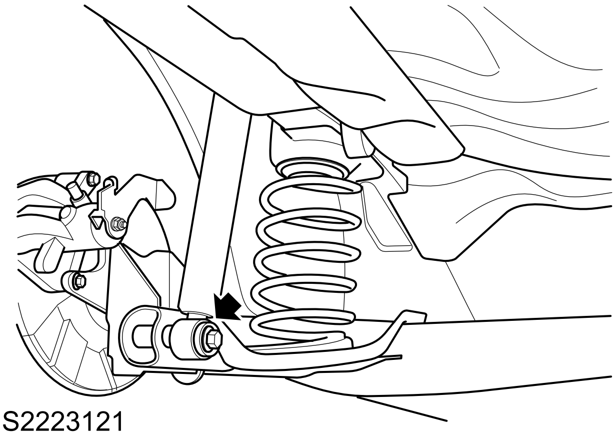
Rear Suspension Spring Assembly

Remove

1. Remove the rear wheels.

☞**Wheels Remove**

2. Raise the vehicle and support it securely, use a jack stand to support the torsion beam.
3. Remove and discard the retaining bolts on both sides under the shock absorber.



S2223121

4. Lower the torsion beam, and remove the spring and upper&lower vibration isolators.

Refit

1. Fit and fasten the lower vibration isolator.
2. Fit the spring and upper vibration isolator, and raise the torsion beam.
3. Pass the new bolt through the connecting bracket under the shock absorber into the torsion beam, and tighten it to **140–170Nm**.
4. Fit the rear wheels.

☞**Wheels Refit**

5. Remove the jack stand and lower the vehicle.

Rear Wheel Hub

Remove

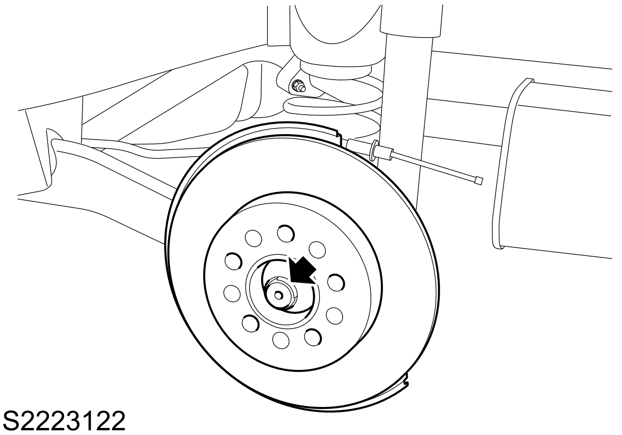
1. Remove the rear wheel.

☞**Wheels Remove**

2. Remove the rear brake caliper and the rear brake disc.

☞**Rear Brake Disc Remove**

3. Remove the wheel hub bearing grease cap, and remove the rear wheel hub bearing retaining bolt, discard the cap and the bolt.



S2223122

4. Remove the rear wheel hub bearing.

Refit

1. Locate the rear wheel hub bearing assembly to the rear spindle.
2. Fit 1 new rear wheel hub bearing assembly retaining bolt and tighten it to **(190-210) Nm+ (85-95) °**.
3. Fit 1 new rear wheel hub bearing assembly grease cap.
4. Fit the rear brake caliper and rear brake disc.

☞**Rear Brake Disc Refit**

5. Fit the rear wheel.

☞**Wheels Refit**

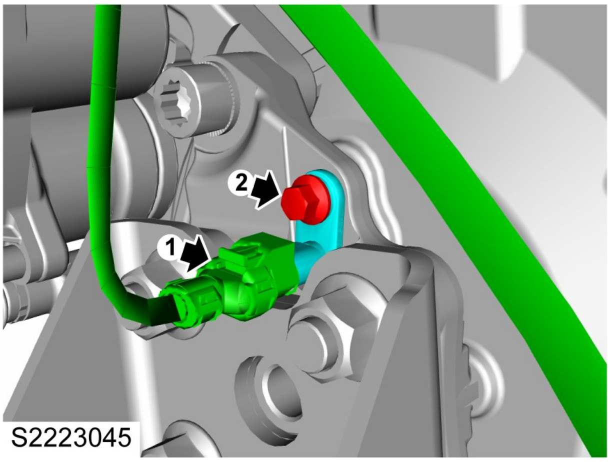
Wheel Bracket

Remove

1. Disconnect the negative battery cable.
2. Remove the rear brake disc guard.

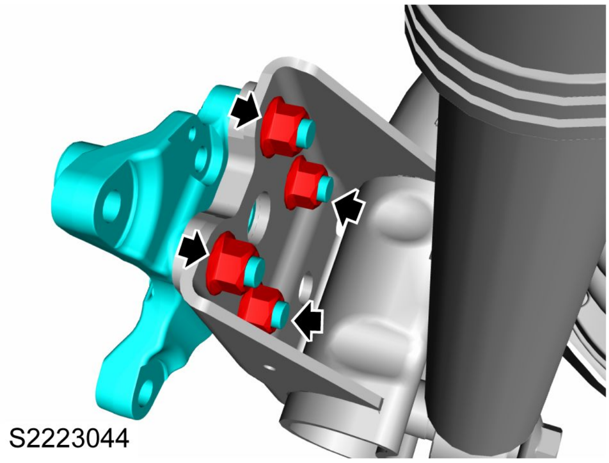
☞**Rear Brake Disc Guard Remove**

3. Disconnect the harness connector (1) of the rear wheel speed sensor.
4. Remove 1 bolt (2) fixing the rear wheel speed sensor to the rear wheel bracket.



S2223045

5. Remove and discard 4 nuts fixing the rear wheel bracket to the torsion beam.



S2223044

6. Remove the rear wheel bracket.

Refit

1. Locate the rear wheel speed sensor to the rear wheel bracket, fit 1 bolt and tighten it to **7–10Nm**.
2. Connect the harness connector of the rear wheel speed sensor.
3. Locate the rear wheel bracket to the torsion beam, fit 4 nuts and tighten them to **90-110Nm**.
4. Fit the rear brake disc guard.

☞**Rear Brake Disc Guard Refit**

5. Connect the negative battery cable.

Rear Torsion Beam Assembly

Remove

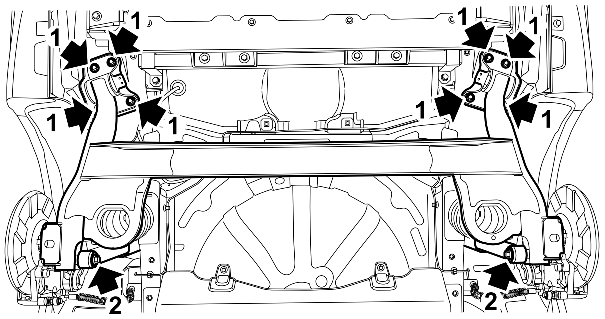
1. Remove the rear wheel hub assembly.

☞**Rear Wheel Hub Remove**

2. Remove the rear wheel speed sensor.

☞**Rear Wheel Speed Sensor Remove**

3. Remove 4 nuts fixing the rear brake disc guard plate and rear spindle to the rear torsion beam.
4. Remove the rear brake disc guard plate and rear spindle.
5. Support the rear torsion beam assembly with the hydraulic lifter.
6. Remove 8 bolts(1) fixing the rear torsion beam to the body.
7. Remove the bolt (2) fixing the rear shock absorber to the rear torsion beam, and disconnect the connection.



S2213365

8. Slowly lower the hydraulic lifter.
9. Remove the rear suspension spring assembly, and remove the rear torsion beam assembly.

Refit

1. Clean the junction surface of the rear torsion beam assembly and the body.
2. Locate the rear torsion beam to its fixing points on the body with the hydraulic lifter.
3. Locate the rear shock absorber to the rear torsion beam, fit a new bolt and tighten it to **140–170Nm**.
4. Locate the rear torsion beam to the body, fit 8 bolts and tighten them to **90–110Nm**.
5. Lower the hydraulic lifter, and push it to the safety zone.
6. Locate the rear spindle and rear brake disc guard plate to the rear torsion beam, fit 4 nuts and tighten them to **90–110Nm**.
7. Fit the rear wheel speed sensor.

☞**Rear Wheel Speed Sensor Refit**

8. Fit the rear wheel hub assembly.

☞**Rear Wheel Hub Assembly Refit**

Tyres and Wheels

Specifications

Torque

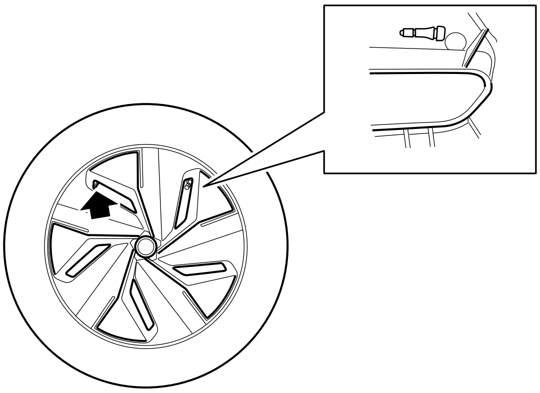
Description	Value
Bolts-road wheel	120–130Nm

Service Procedures

Tires and Wheels

Remove

1. Take the position indicated by the arrow as the drawing point to remove the wheel trim cover.



S2313059

2. Use the wheel bolt spanner to loosen each of the wheel bolts half a turn anti-clockwise.
3. Place the vehicle on a suitable lift or jacking device, raise to a suitable height.
4. Remove the 5 wheel bolts and put them in the tool tray.
5. Remove the wheels, extract the valve core assembly and discard it, and remove the tyre from the rim with a tyre changer.

Caution: Please pay special attention and take extra care when working in the area of the tyre valve - this may features an electronic transmitter device that can be easily damaged.

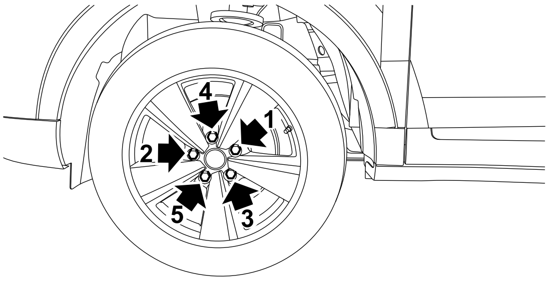
Warning: Use a tyre changer to remove the tyre. Manual tools or prybar could damage the road wheel or tyre.

Caution: Do not place the wheel face down on the ground to avoid scratching.

Refit

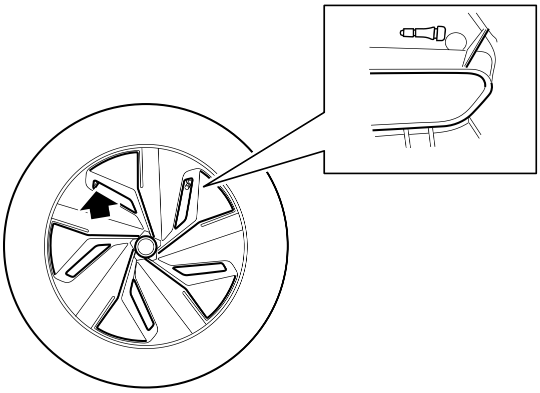
Caution: Please remove any corrosion from the surface of the road wheel, drum and brake disc before refitting. If wheel, disc and drum contact surfaces are not properly cleaned, the wheel fixings could become loose and may cause the wheel to fall off while the vehicle is moving. This will cause the vehicle to go out of control, and could cause injury.

1. Fit the new wheel valve assembly.
2. Fit the tyre onto the wheel using a suitable tyre changer and inflate the tyre until the rim is in place. Ensure both tyre beads are fully seated against the wheel rims.
3. Carry out a wheel dynamic balance using suitable tyre balancing equipment.
4. Fit the wheel and tighten the wheel bolts until the wheel is seated firmly against the hub.
5. Lower the vehicle.
6. Tighten 5 wheel bolts to **120–130Nm**. For tightening order, please see the picture below (1 to 5).



S2313040

7. Align the hollowed out part beside the valve mark on the back of the wheel trim cover with the valve, and refit the wheel trim cover.



S2313059

Warning: If there is oil leakage between the wheel and the brake disc or drum, it will cause the wheel bolts to become loose and result in injury with the vehicle out of control. Never use heat to remove a seized wheel. This will shorten the life of the wheel, wheel bolts, hub and bearing. Wheel bolts must be tightened in correct sequence and to correct torque to avoid distortion of wheel, brake drum or disc.

Tyre Pressure Monitoring System

Specifications

Torque

Description	Value
Bolts-Tire pressure detection controller to the back panel of the central console	1.3–1.9Nm

Service Procedures

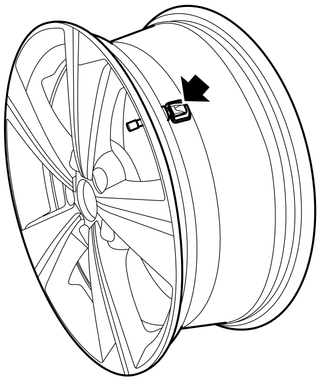
Tyre Pressure Sensor

Remove

1. Remove wheels.

Wheels Remove

2. Deflate the tyre.
3. Use the tyre changer to release the tyre from the rim until the tyre pressure sensor can be seen.
4. Pull out the tyre pressure sensor and valve core assembly.



S2313041

5. Remove the tyre pressure sensor and valve core assembly.

Refit

1. Fit the new tyre pressure sensor and valve core base assembly to the hub. When fitting the tyre, ensure the tyre will not touch the electronic module.
2. Inflate the tyre.
3. Rebalance the tyres.
4. Fit wheels.

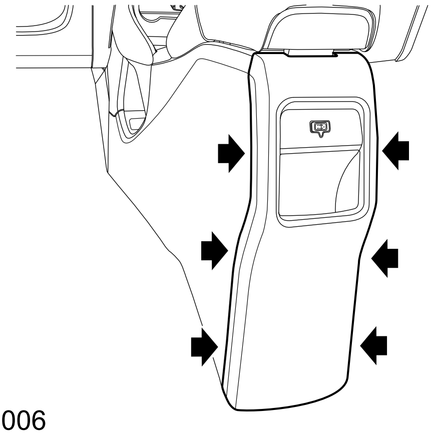
Wheels Refit

5. Drive the vehicle at a speed of 40km/h for about 10 minutes until the tyre pressure value at the corresponding position is correctly displayed in the instrument display.

TPMS Control

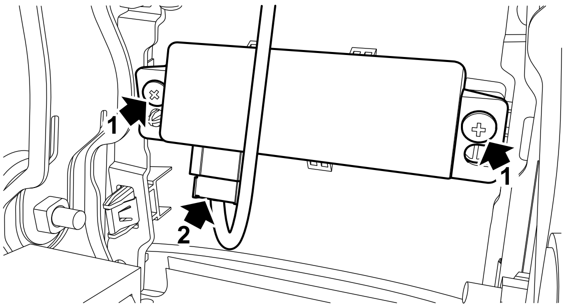
Remove

1. Disconnect the negative battery.
2. Use tools to pry open the buttons that fix the back panel of the central console to the central console assembly (as shown by the arrow).



S4124006

3. Disconnect the TPMS controller electrical connector (2).
4. Remove the two screws (1) that fix the tire pressure monitoring controller to the back panel of the central console.



S2313042

5. Remove the TPMS controller.

Refit

1. Position the TPMS controller on the back panel of the central console, install two screws, and tighten to**1.3–1.9Nm**。
2. Connect the TPMS controller electrical connector.
3. Position the rear panel assembly of the central console on the central console, and take the buckle in place.
4. Connect the battery negative.
5. Drive the vehicle at a speed of 40km/h(25mph) for about 10 minutes until the tyre pressure value at the corresponding position is correctly displayed in the instrument display.

Brake

Specifications

Torque

Description	Value
Bolts-Front brake caliper housing to brake caliper bracket	25–30Nm
Screw-Front brake disc to front wheel hub	7–10Nm
Bolts-Front brake caliper to steering hub assembly	190–210Nm
Bolts-Front brake disc protector to steering hub assembly	7–10Nm
Bolts-Front brake hose to front brake caliper housing	28–32Nm
Bolts-Brake caliper bracket to steering hub assembly	190–210Nm
Bolts-Rear brake caliper housing to rear brake caliper bracket	31–38Nm
Screw-Rear brake disc to rear wheel carrier	7–10Nm
Bolts-Rear brake caliper bracket to rear wheel bracket	(81–99)Nm+(85–95)°
Bolts-Rear brake disc retaining to rear wheel bracket	7–10Nm
Bolts-Rear brake hose to rear brake caliper housing	28–32Nm
Bolt-Fluid reservoir to master cylinder	2.5–4.5Nm
Nuts- master cylinder to servo	21–29Nm
Nuts-Brake pipe to master cylinder	15–19Nm
Nuts- servo to pedal bracket	19–25Nm
Bolt-Brake light signal sensor to master cylinder	7–9Nm
Bolt- expansion tank to body	4–6Nm
Nuts-Brake pedal to front panel	19–25Nm
Bolts-Steering column intermediate shaft to upper steering column	20Nm+120°
Nuts-Acceleration pedal to front panel	4–5Nm
Nuts-Brake pipe to ABS modulator	15–19Nm
Nuts-Brake pipe to brake hose pipe	15–19Nm
Nuts-Brake pipe to brake pipe	13–15Nm
Screw-Front bleeding screw	16–18Nm
Screw-Rear bleeding screw	9–13Nm
Bolts- EVP to bracket	7–10Nm

Service Procedures

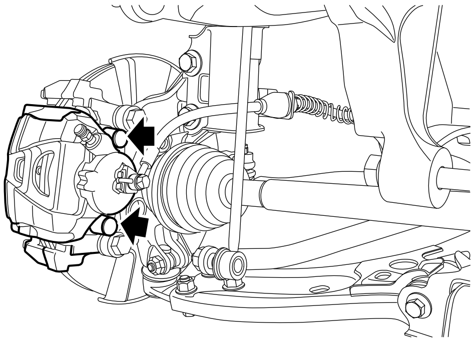
Front Brake Pad

Remove

1. Remove the front wheels.

☞**Wheels Remove**

2. Remove the stop spring of the front brake caliper.
3. Remove the guide pin caps of the front brake caliper.
4. Remove and discard 2 guide pin bolts fixing the brake caliper housing assembly to the front brake caliper bracket.



S2413540

5. Remove the front brake caliper housing assembly from the front brake caliper bracket, and find the appropriate position to fix it.

***Caution:** Do not tie or allow caliper to hang on brake hose.*

6. Remove the front brake pad from the brake caliper bracket.

Refit

1. Clean up all dirt and corrosion contents from the edge of the front brake disc.
2. Clean the front brake caliper housing and the front brake caliper bracket, and check the front brake caliper and seals for damage.
3. Locate the new front brake pad to the front brake caliper bracket.
4. Use a tool to press the piston back into the brake caliper housing.
5. Locate the front brake caliper housing assembly to the front brake caliper bracket, fit 2 new guide pin bolts, and tighten them to **25–30Nm**.
6. Fit the guide pin caps of front brake caliper.
7. Fit the stop spring of front brake caliper.
8. Fit the front wheels.

☞**Wheels Refit**

9. Depress the brake pedal for several times to fit the front brake pad in place.

***Tip:** Pedal travel may be longer than normal during first brake applications.*

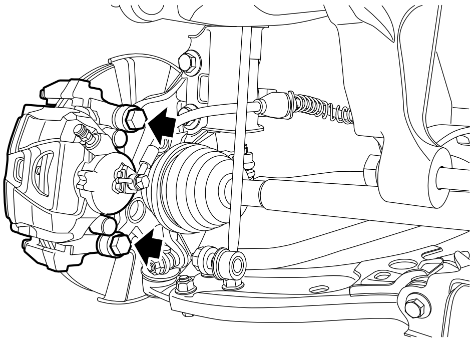
Front Brake Disc

Remove

1. Remove the front wheels.

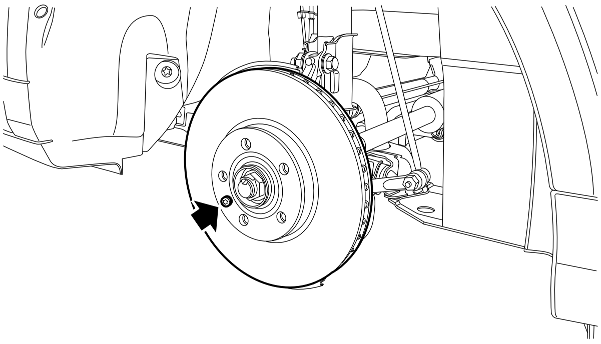
☞**Wheels Remove**

2. Remove and discard 2 bolts fixing the front brake caliper assembly to the steering knuckle.



S2413558

3. Lift the brake caliper assembly and find the appropriate position to fix it.
4. Remove 1 countersunk head screw fixing the front brake disc to the front wheel hub.



S2413544

5. Remove the front brake disc assembly.

Refit

1. Clean the junction surface of the front brake disc and the front wheel hub.
2. Locate the front brake disc to the front wheel hub, fit 1 countersunk head screw and tighten it to **7–10Nm**.
3. Check the runout of the front brake disc.

☞**Thickness and Circular Runout Check – Front Brake Disc**

4. Check the front brake pad, and replace it if necessary.
5. Fix the front brake caliper assembly to the steering knuckle, fit 2 new bolts and tighten them to **190–210Nm**.
6. Fit the front wheels.

☞**Wheels Refit**

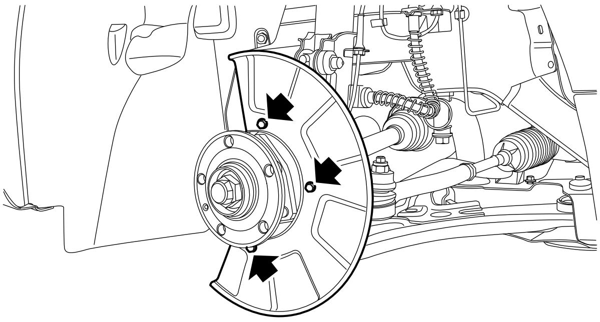
Front Brake Disc Guard Plate

Remove

1. Remove the front brake disc.

☞**Front Brake Disc Remove**

2. Remove 3 bolts fixing the front brake disc guard plate to the steering knuckle.



S2413545

3. Remove the front brake disc guard plate.

Refit

1. Locate the front brake disc guard plate to the steering knuckle, fit 3 bolts and tighten them to **7–10Nm**.
2. Fit the front brake disc.

☞**Front Brake Disc Refit**

Front Brake Caliper Housing Assembly

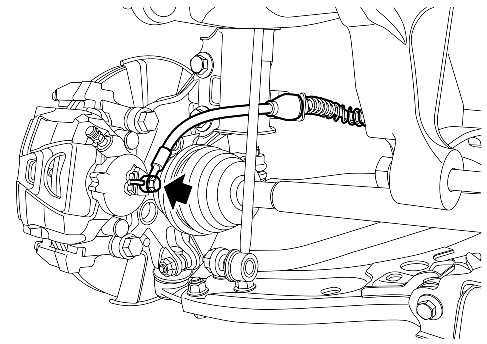
Remove

1. Remove the front wheels.

☞**Wheels Remove**

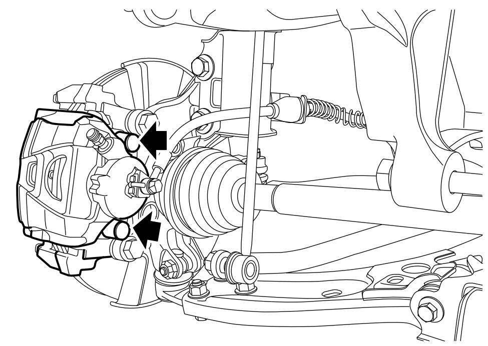
2. Put the cloth at the front brake hose fitting to absorb the spilled brake fluid.
3. Remove 1 bolt and gasket fixing the front brake hose to the front brake caliper housing, discard the gasket and disconnect the pipeline.

Caution: Before disconnecting or removing components, ensure the immediate area around joint faces and connections are clean. Plug open connections to prevent contamination.



S2413554

4. Remove the stop spring of the front brake caliper.
5. Remove the guide pin caps of the front brake caliper.
6. Remove and discard 2 guide pin bolts fixing the front brake caliper housing to the front brake caliper bracket.



S2413540

7. Remove the front brake caliper housing assembly.

Refit

1. Clean up all dirt and corrosion contents from the edge of the front brake disc.
2. Locate the front brake caliper housing to the front brake caliper bracket, fit 2 new guide pin bolts, and tighten them to **25–30Nm**.

3. Fit the guide pin caps of front brake caliper.
4. Fit the stop spring of front brake caliper.
5. Locate the front brake hose to the front brake caliper housing, fit 1 bolt and new gasket, and tighten it to **28–32Nm**.
6. Take the cloth for absorbing spilled brake fluid away and dispose of it.
7. Drain the brake system.

☞**Brake System Drain**

8. Fit the wheels.

☞**Wheels Refit**

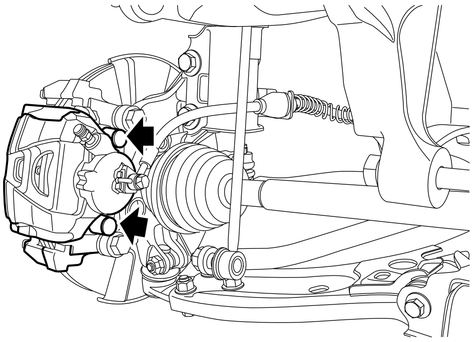
Front Brake Caliper Bracket

Remove

1. Remove the front wheels.

☞**Wheels Remove**

2. Remove the stop spring of the front brake caliper.
3. Remove the guide pin caps of the front brake caliper.
4. Remove and discard 2 guide pin bolts fixing the front brake caliper housing to the front brake caliper bracket.

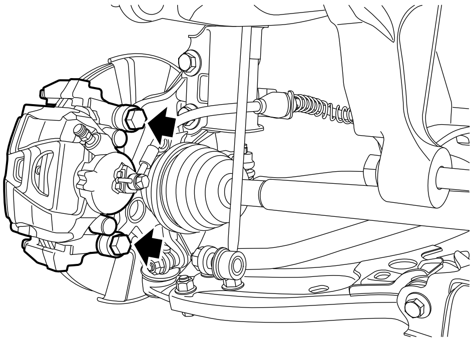


S2413540

5. Remove the front brake caliper housing assembly, move it to an appropriate position and fix it.

Caution: Do not tie or allow caliper to hang on brake hose.

6. Remove the front brake pad from the brake caliper bracket.
7. Remove and discard 2 bolts fixing the front brake caliper bracket to the steering knuckle.



S2413558

8. Remove the front brake caliper bracket.

Refit

1. Locate the front brake caliper bracket to the steering knuckle, fit 2 new bolts and tighten them to **190–210Nm**.
2. Clean the front brake caliper housing and the front brake caliper bracket.
3. Fit the front brake pad to the front brake caliper

bracket.

4. Remove the front brake caliper housing.
5. Locate the front brake caliper housing to the front brake caliper bracket, fit 2 new guide pin bolts, and tighten them to **25–30Nm**.
6. Fit the guide pin caps of front brake caliper.
7. Fit the stop spring of front brake caliper.
8. Fit the front wheels.

☞**Wheels Refit**

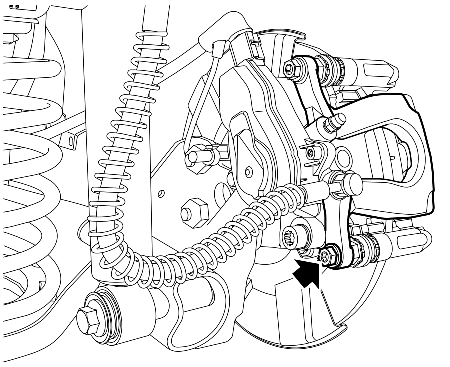
Rear Brake Pad

Remove

1. Use the scan tool to release the electronic parking brake.
2. Disconnect the negative battery cable.
3. Remove the rear wheels.

☞**Wheels Remove**

4. Disconnect the parking motor harness connector.
5. Remove 1 bolt fixing the rear brake caliper housing assembly to the rear brake caliper bracket.



S2413555

6. Turn up the rear brake caliper housing and fix it. Be careful not to damage the hoses or other components.

Caution: Do not tie or allow caliper to hang on brake hose.

7. Remove the rear brake pad from the rear brake caliper bracket.

Refit

1. Clean all dirt and corrosion contents from the edge of the rear brake disc.
2. Clean the rear brake caliper housing and the rear brake caliper bracket, and check the rear brake caliper for damage.
3. Locate the rear brake pad spring to the rear brake caliper bracket.
4. Locate the rear brake pad to the rear brake pad spring. Let the inner and outer brake pads clamp the brake disc and then release. Confirm that the inner and outer brake pads can be returned, and there are visible gaps between the brake pads and the brake disc.

Caution: Please replace the rear brake pad spring, if the rear brake pad is replaced.

5. Use tools to press the rear brake caliper piston into the rear brake caliper housing.
6. Turn down the rear brake caliper housing, locate it to the rear brake caliper bracket and align them, fit 1 bolt and tighten it to **31–38Nm**.

7. Connect the parking motor harness connector.
8. Fit the rear wheels.

☞**Wheels Refit**

9. Connect the negative battery cable.
10. Depress the brake pedal for several times to fit the rear brake pad in place.

Tip: Pedal travel may be longer than normal during first brake applications.

11. Connect the scan tool and carry out the electronic parking brake system component replacement/adjustment routine.

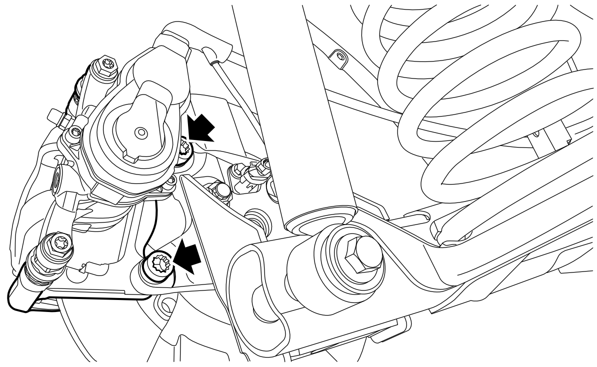
Rear Brake Disc

Remove

1. Use the scan tool to release the electronic parking brake.
2. Disconnect the negative battery cable.
3. Remove the rear wheels.

☞**Wheels Remove**

4. Disconnect the parking motor harness connector.
5. Remove and discard 2 bolts fixing the rear brake caliper assembly to the rear spindle.

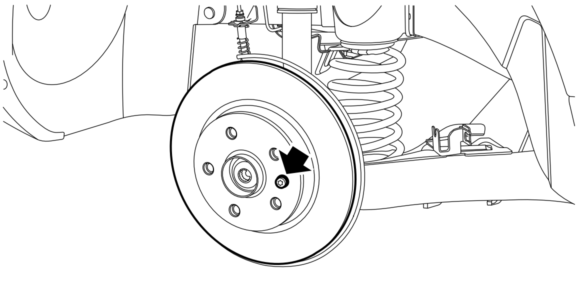


S2413549

6. Carefully pry up the rear brake caliper assembly with a tool, and find an appropriate position to fix it.

Caution: Do not tie or allow caliper to hang on brake hose.

7. Remove 1 countersunk head screw fixing the rear brake disc to the rear wheel hub.



S2413530

8. Remove the rear brake disc from the vehicle.

Refit

1. Clean the mating interface of the rear brake disc and the rear wheel hub.
2. Locate the rear brake disc to the rear wheel hub, fit 1 countersunk head screw and tighten it to **7–10Nm**.
3. Check the runout of the rear brake disc.

☞**Thickness and Circular Runout Check - Rear Brake Disc**

4. Check the mounting surface and holes of the rear spindle and rear brake caliper assembly, remove the foreign material or oil stain to ensure clean mounting surface and holes.
5. Use tools to press the rear brake caliper piston into the rear brake caliper housing.
6. Locate the rear brake caliper assembly to the rear spindle, fit 2 new bolts and tighten them to **(81–99)Nm+(85–95)°**.

Caution: The bolt can only be used once, and it should be replaced by a new one after the bolt is screwed (not only screw down but also screw off).

7. Connect the parking motor harness connector.
8. Fit the rear wheels.

☞**Wheels Refit**

9. Connect the negative battery cable.
10. Connect the scan tool and carry out the electronic parking brake system component replacement/adjustment routine.

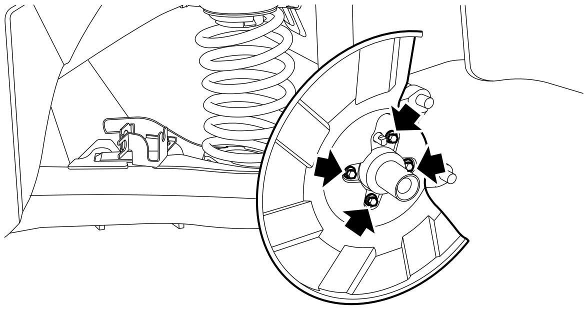
Rear Brake Disc Guard Plate

Remove

1. Remove the rear wheel hub.

☞**Rear Wheel Hub Remove**

2. Remove 4 bolts fixing the rear brake disc guard plate to the rear spindle.



S2413529

3. Remove the rear brake disc guard plate from the vehicle.

Refit

1. Locate the rear brake disc guard plate to the rear spindle, fit 4 bolts and tighten them to **7–10Nm**.
2. Fit the rear wheel hub.

☞**Rear Wheel Hub Refit**

Rear Brake Caliper Housing Assembly

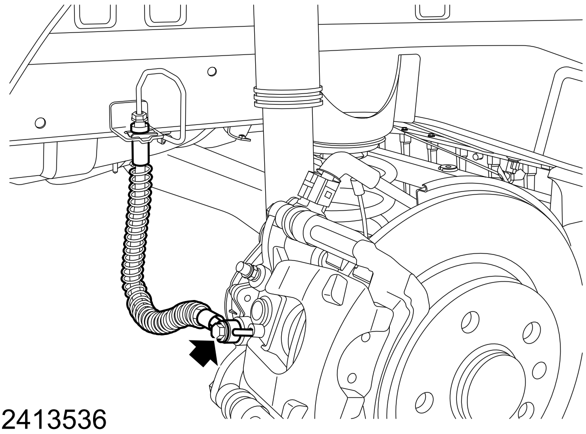
Remove

1. Remove the electronic parking brake motor.

☞**Electronic Parking Brake Motor Remove**

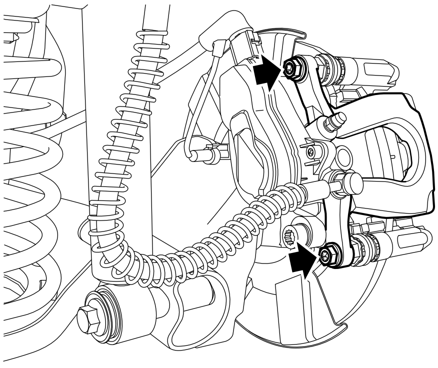
2. Put the cloth at the rear brake hose fitting to absorb the spilled brake fluid.
3. Remove 1 bolt and gasket fixing the rear brake hose to the rear brake caliper housing, and discard the gasket.

Caution: Before disconnecting or removing components, ensure the immediate area around joint faces and connections are clean. Plug open connections to prevent contamination.



S2413536

4. Remove 2 bolts fixing the rear brake caliper housing assembly to the rear brake caliper bracket.



S2413565

5. Remove the rear brake caliper housing assembly from the vehicle.

Refit

1. Clean the rear brake components with brake cleaner.
2. Locate the rear brake caliper housing assembly to the rear brake caliper bracket, fit 2 bolts and tighten them to **31–38Nm**.
3. Locate the rear brake hose to the rear brake caliper housing, fit 1 bolt and new gasket, and tighten it to **28–32Nm**.
4. Take the cloth for absorbing spilled brake fluid away and dispose of it.
5. Fit the electronic parking brake motor.

☞**Electronic Parking Brake Motor Refit**

6. Drain the brake system.

☞**Brake System Drain**

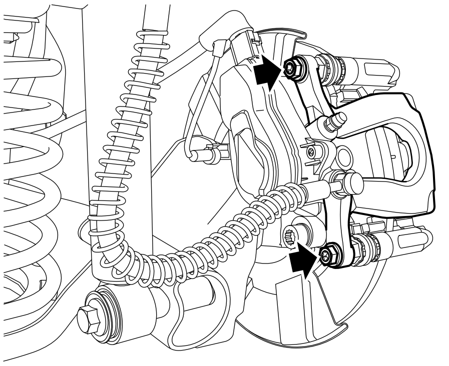
Rear Brake Caliper Bracket

Remove

1. Use the scan tool to release the electronic parking brake.
2. Disconnect the negative battery cable.
3. Remove the rear wheels.

☞**Wheels Remove**

4. Disconnect the parking motor harness connector.
5. Remove 2 bolts fixing the rear brake caliper housing assembly to the rear brake caliper bracket.

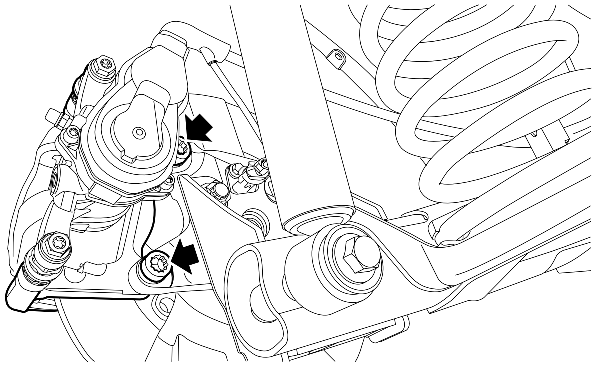


S2413565

6. Carefully pry up the rear brake caliper housing assembly with a tool, move it to an appropriate position and fix it.

Caution: Do not tie or allow caliper to hang on brake hose.

7. Remove the rear brake pad.
8. Remove and discard 2 bolts fixing the rear brake caliper bracket to the rear spindle.



S2413549

9. Remove the rear brake caliper bracket.

Refit

1. Clean all dirt and corrosion contents from the edge of the rear brake disc.
2. Clean the rear brake caliper housing and the rear brake caliper bracket with brake cleaner.
3. Locate the rear brake caliper bracket to the rear spindle, fit 2 new bolts and tighten them to **(81–99)Nm+(85–95)°**.
4. Fit the rear brake pad.
5. Remove the rear brake caliper housing assembly.
6. Locate the rear brake caliper housing assembly to the rear brake caliper bracket, fit 2 bolts and tighten them to **31–38Nm**.
7. Connect the parking motor harness connector.
8. Fit the rear wheels.

☞**Wheels Refit**

9. Connect the negative battery cable.
10. Connect the scan tool and carry out the electronic parking brake system component replacement/adjustment routine.

Thickness and Circular Runout Check - Front Brake Disc

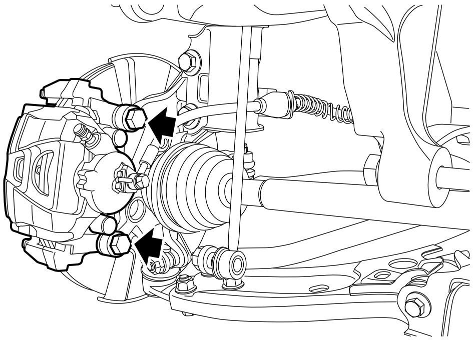
Check

1. Remove the front wheels.

☞**Wheels Remove**

Warning: Do not work on or under a vehicle supported only by a jack.Always support the vehicle on safety stands.

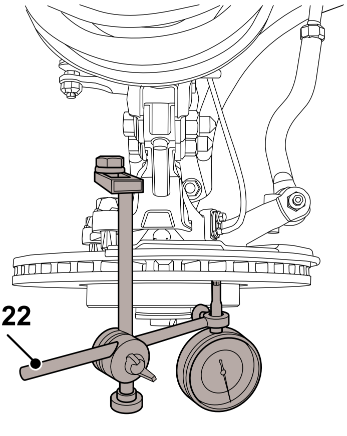
2. Remove and discard 2 bolts fixing the front brake caliper assembly to the steering knuckle.



S2413558

3. Remove the front brake caliper assembly and move it to an appropriate position to fix it.
4. Measure the thickness of the front brake disc as per the four equal division points on the surface of front brake disc with a micrometer, and the measurement points are located 10mm inward from the edge of the front brake disc. The thickness of the front brake disc shall be at least 23mm. If it exceeds the limit, the front brake disc must be replaced.

Caution: Brake discs must be renewed in pairs, unless one disc requires renewal before 1000 miles (1500 km) from new.



S2413535

5. Fit the dial indicator (**DTI**) to the **TCH00022**, and fix the **TCH00022** to the inner side of the front wheel hub through the bolt hole of the front brake caliper assembly.
6. Fix the probe of the **DTI** to the location 10mm inward from the edge of the front brake disc.
7. Fit the front wheels.

☞**Wheels Refit**

8. Reset the **DTI**, turn the wheel for a full circle and measure the front brake disc runout. The runout of the front brake disc shall not exceed 0.05mm.
9. If the brake disc runout exceeds the limit:
    a. Remove the front wheels.
    b. Remove 1 countersunk head screw fixing the front brake disc to the front wheel hub and remove the front brake disc.
    c. Clean the junction surface of the front brake disc and the front wheel hub.
    d. Fit the front brake disc to the front wheel hub, fit 1 countersunk head screw and tighten it to **7–10Nm**.
    e. Fit the front wheels.
    f. Recheck the runout of the brake disc according to the above procedures.
    g. If the runout still exceeds the limit, replace the front brake disc or front wheel hub.
10. Remove the front wheels.

☞**Wheels Remove**

11. Remove the **DTI** and **TCH00022** from the inner side of the front wheel hub.
12. Fix the front brake caliper assembly to the front steering knuckle, fit 2 new bolts and tighten them to **190–210Nm**.
13. Fit the front wheels.

☞**Wheels Refit**

14. Depress the brake pedal for several times to fit the front brake pad in place.

Tip: Pedal travel may be longer than normal during first brake applications.

Thickness and Circular Runout Check - Rear Brake Disc

Check

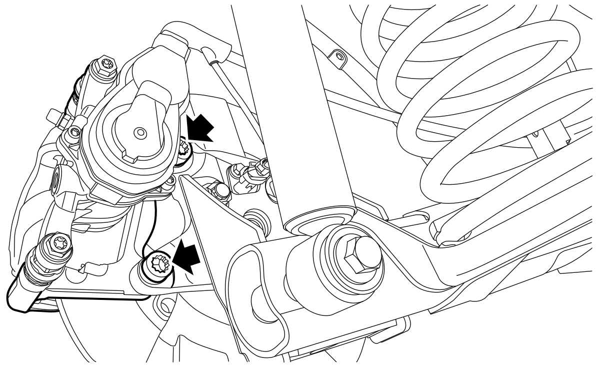
1. Use the scan tool to release the electronic parking brake.
2. Disconnect the negative battery cable.
3. Remove the rear wheels.

☞**Wheels Remove**

Warning: Do not work on or under a vehicle supported only by a jack.Always support the vehicle on safety stands.

4. Disconnect the parking motor harness connector.
5. Remove and discard 2 bolts fixing the rear brake caliper assembly to the rear spindle, remove the rear brake caliper assembly and move it to an appropriate position to fix it.

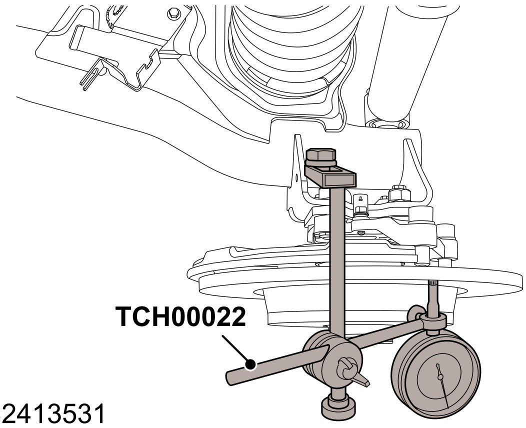
Caution: Do not tie or allow caliper to hang on brake hose.



S2413549

6. Measure the thickness of the rear brake disc as per the four equal division points on the surface of rear brake disc with a micrometer, and the measurement points are located 10mm inward from the edge of the rear brake disc. The thickness of the rear brake disc shall be at least 8mm. If it exceeds the limit, the rear brake disc must be replaced.

Caution: Brake discs must be renewed in pairs, unless one disc requires renewal before 1000 miles (1500 km) from new.



S2413531

7. Fit the dial indicator (**DTI**) to the **TCH00022**, and fix the **TCH00022** to the inner side of the rear wheel bracket through the bolt hole of the rear brake caliper assembly.
8. Fix the probe of the **DTI** to the location 10mm inward from the edge of the rear brake disc.
9. Fit the rear wheels.

☞**Wheels Refit**

10. Reset the **DTI**, turn the wheel for a full circle and measure the rear brake disc runout. The runout of the rear brake disc shall not exceed 0.08mm.
11. If the rear brake disc runout exceeds the limit:
    a. Remove the rear wheels.
    b. Remove 1 countersunk head screw fixing the rear brake disc to the rear wheel hub and remove the rear brake disc.
    c. Clean the junction surface of the rear brake disc and the rear wheel hub.
    d. Locate the rear brake disc to the rear wheel hub, fit 1 countersunk head screw and tighten it to **7–10Nm**.
    e. Fit the rear wheels.
    f. Recheck the runout of the rear brake disc according to the above procedures.
    g. If the runout still exceeds the limit, replace the rear brake disc or the rear wheel hub.
12. Remove the rear wheels.

☞**Wheels Remove**

13. Remove the **DTI** and **TCH00022** from the inner side of the rear wheel hub.
14. Locate the rear brake caliper assembly to the rear spindle, fit 2 new bolts and tighten them to **(81–99)Nm+(85–95)°**.
15. Connect the parking motor harness connector.
16. Fit the rear wheels.

☞**Wheels Refit**

17. Connect the negative battery cable.
18. Depress the brake pedal for several times to fit the rear brake pad in place.

Tip: Pedal travel may be longer than normal during first brake applications.

19. Use the scan tool to adjust the electronic parking brake system.

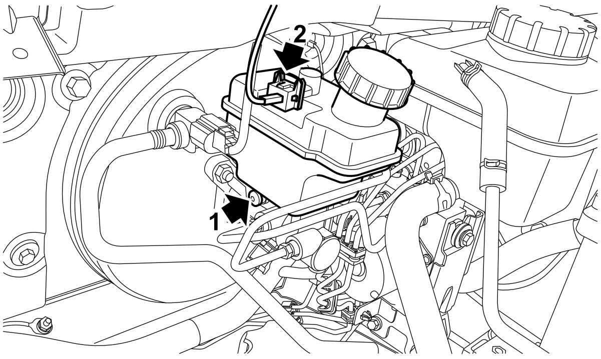
Reservoir Assembly

Remove

1. Disconnect the negative battery cable.
2. Unscrew the brake fluid reservoir cap, and drain the brake fluid.
3. Put the cloth under the brake master cylinder and reservoir assembly to absorb the spilled brake fluid.

Caution: Brake fluid will damage paint finished surfaces. If spilled, immediately remove fluid and clean area with water.

4. Disconnect the harness connector (2) of the brake fluid reservoir level sensor.
5. Remove 1 bolt (1) fixing the brake fluid reservoir to the brake master cylinder.



S2413538

6. Remove the brake fluid reservoir assembly.

Refit

1. Locate the brake fluid reservoir to the brake master cylinder, fit 1 bolt, and tighten it to **2.5–4.5Nm**.
2. Connect the harness connector of the brake fluid reservoir level sensor.
3. Take the cloth for absorbing spilled brake fluid away and dispose of it.
4. Connect the negative battery cable.
5. Drain the brake system.

☞**Brake System Drain**

Brake Master Cylinder

Remove

1. Remove the brake fluid reservoir assembly.

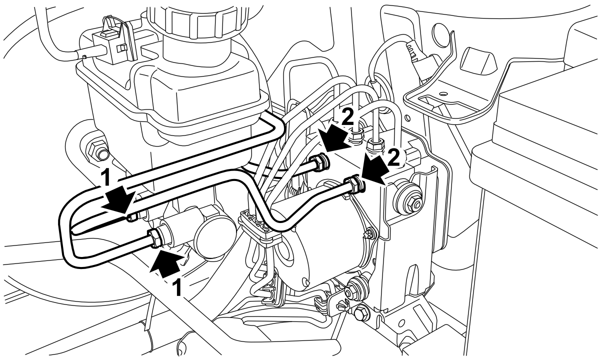
☞**`Reservoir Assembly Remove`**

2. Remove the brake lamp signal sensor.

☞**`Brake Lamp Signal Sensor Remove`**

3. Release 2 brake hard pipes (1) from the brake master cylinder.

Caution: Before disconnecting or removing components, ensure the immediate area around joint faces and connections are clean. Plug open connections to prevent contamination.



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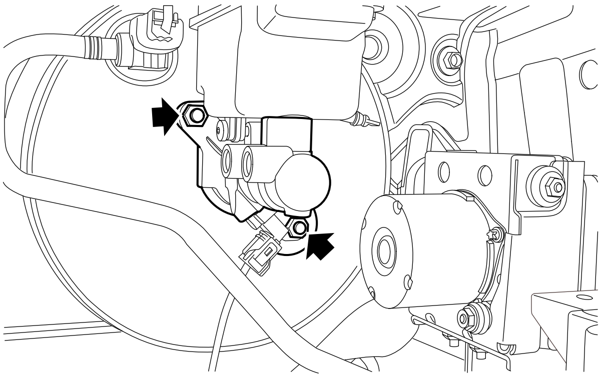
4. Remove and discard 2 nuts fixing the brake master cylinder to the vacuum booster.



S2413548

5. Remove the brake master cylinder from the vehicle.

Refit

1. Locate the brake master cylinder to the vacuum booster, fit 2 new nuts and tighten them to **21–29Nm**.
2. Clean the brake hard pipe fittings.
3. Locate the brake hard pipe fittings to the brake master cylinder, and tighten the fitting nuts to **15–19Nm**.
4. Fit the brake lamp signal sensor.

☞**`Brake Lamp Signal Sensor Refit`**

5. Fit the brake fluid reservoir assembly.

☞**`Reservoir Assembly Refit`**

Vacuum Booster Assembly

Remove

1. Remove the brake modulator.

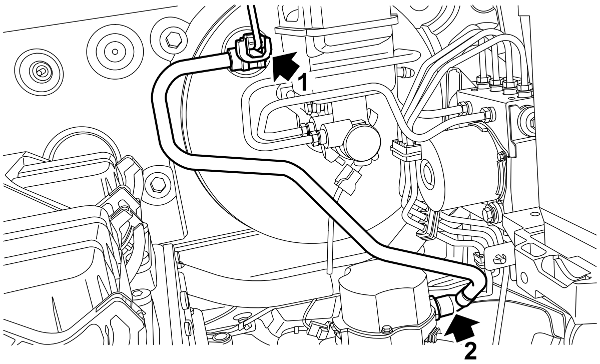
Brake Modulator Remove

2. Remove the brake master cylinder.

Brake Master Cylinder Remove

3. Disconnect the harness connector of the vacuum sensor.
4. Disconnect the vacuum brake hose from the vacuum booster (1).

Caution: The force to remove the hose shouldn't too heavy to damage the connector of vacuum hose.Do not damage the connector and keep the connector away from water when removing or fixing the hose with vacuum sensor.



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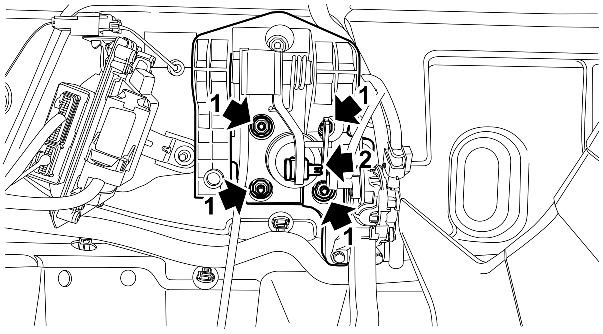
5. Remove the pin (2) fixing the vacuum booster to the brake pedal.
6. Remove 4 nuts (1) fixing the vacuum booster to the pedal bracket.



S2413546

7. Remove the vacuum booster assembly from the vehicle.

Refit

1. Locate the vacuum booster assembly to the pedal bracket, fit 4 nuts and tighten them to **19–25Nm**.
2. Locate the vacuum booster to the brake pedal, fit the pin and fasten it in place.
3. Connect the vacuum brake hose to the vacuum booster.
4. Connect the harness connector of the vacuum sensor.
5. Fit the brake master cylinder.

Brake Master Cylinder Refit

6. Fit the brake modulator.

Brake Modulator Refit

Vacuum Brake Hose Assembly

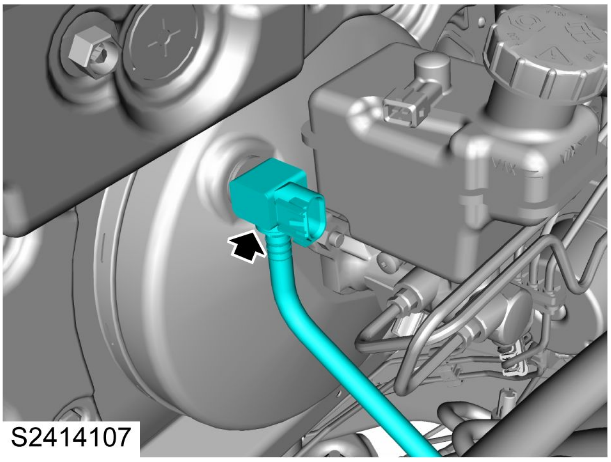
Remove

1. Remove the manual service disconnect.

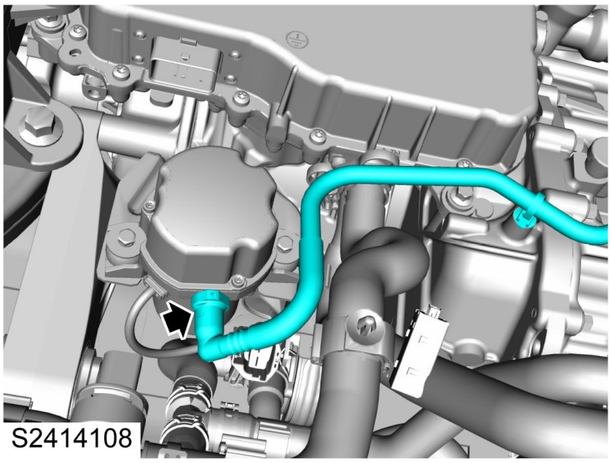
☞**Manual Service Disconnect Remove**

2. Disconnect the harness connector of the vacuum sensor.
3. Disconnect the vacuum brake hose from the vacuum booster.

Caution: The force to remove the hose shouldn't too heavy to damage the connector of vacuum hose.Do not damage the connector and keep the connector away from water when removing or fixing the hose with vacuum sensor.



4. Disconnect the vacuum brake hose from the electric vacuum pump



5. Loosen the clip and remove the vacuum brake hose assembly.

Refit

1. Arrange the vacuum brake hose properly and fit the clip.
2. Connect the vacuum brake hose to the electric vacuum pump.

Caution: Keep the dust and foreign matter from vacuum hose.If having trouble to fix vacuum hose , please using grease special for fixing vacuum hose to lubricate , other liquid or grease is prohibited.

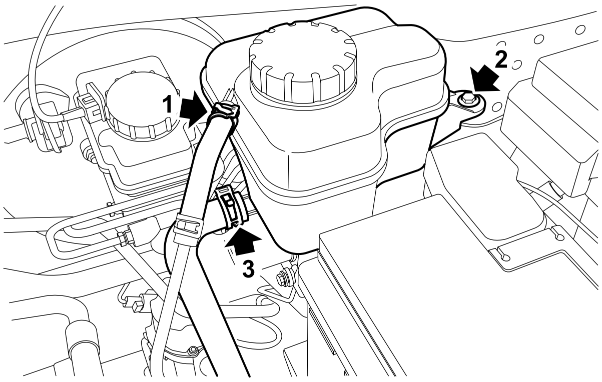
3. Connect the vacuum brake hose to the vacuum booster.
4. Connect the harness connector of the vacuum sensor.
5. Fit the manual service disconnect.

☞**Manual Service Disconnect Refit**

Brake Lamp Signal Sensor

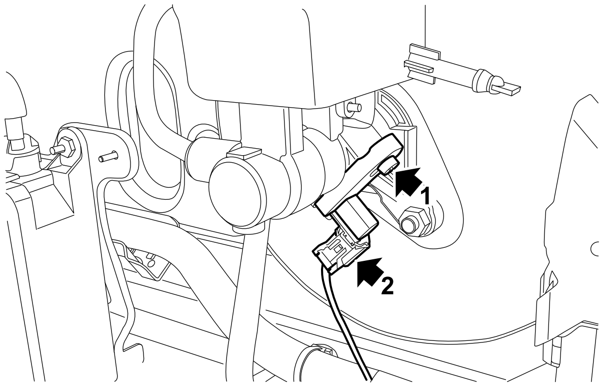
Remove

1. Disconnect the negative battery cable.
2. Remove 1 bolt (2) fixing the coolant expansion tank to the bracket.



S3123601

3. Remove the coolant expansion tank from the bracket.
4. Disconnect the harness connector (2) of the brake lamp signal sensor.
5. Remove 1 bolt (1) fixing the brake lamp signal sensor to the brake master cylinder.



S2413541

6. Remove the brake lamp signal sensor.

Refit

1. Locate the brake lamp signal sensor to the brake master cylinder, fit 1 bolt and tighten it to **7–9Nm**.
2. Connect the harness connector of the brake lamp signal sensor.
3. Locate the coolant expansion tank to the bracket, fit 1 bolt and tighten it to **4–6Nm**.
4. Connect the negative battery cable.

Brake Pedal

Remove

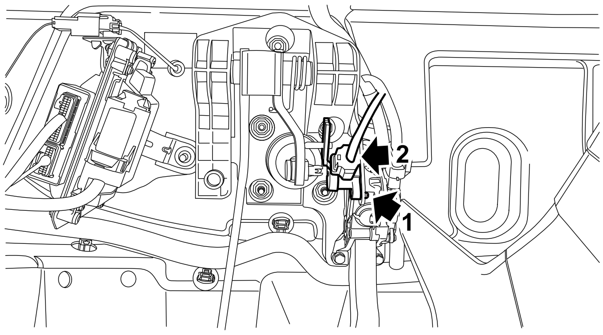
1. Remove the accelerator pedal.

Accelerator Pedal Remove

2. Remove the driver side lower trim panel assembly.

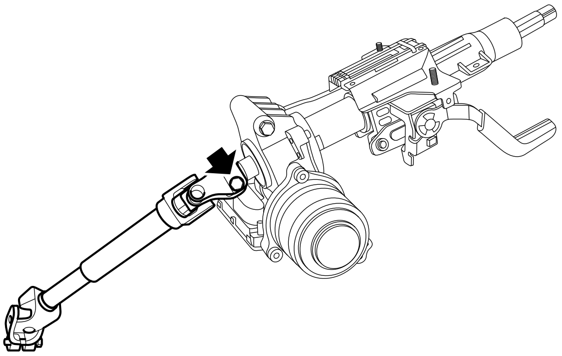
Driver Side Lower Trim Panel Assembly Remove

3. Disconnect the harness connector (2) of the brake pedal position sensor.



S2413570

4. Remove and discard 1 bolt fixing the intermediate shaft universal joint to the steering column.



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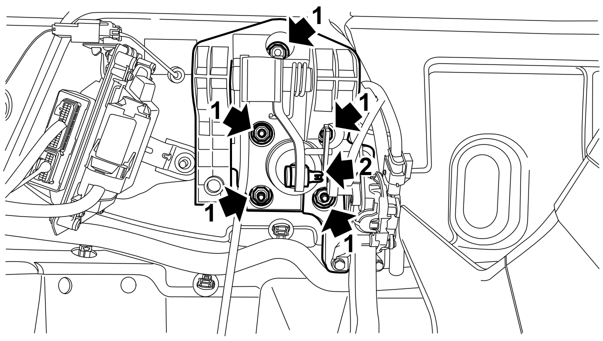
5. Disconnect the intermediate shaft from the steering column.
6. Remove 5 nuts (1) fixing the brake pedal to the dash panel.
7. Remove the pin (2) and disconnect the brake pedal from the vacuum booster.



S2413569

8. Loosen the harness clip fixed onto the pedal bracket and remove the brake pedal assembly.

Refit

1. Locate the brake pedal assembly to the dash panel and make it fit well with the vacuum booster, then fit the harness clip onto the brake pedal bracket.
2. Locate the vacuum booster push rod to the brake pedal and fit the pin by aligning the hole.
3. Fix the brake pedal to the dash panel, fit 5 nuts and tighten them to **19–25Nm**.
4. Locate the intermediate shaft universal joint to the steering column, fit 1 new bolt and tighten it to **20Nm+120°**.
5. Connect the harness connector of the brake pedal position sensor.
6. Fit the driver side lower trim panel assembly.

☞**Driver Side Lower Trim Panel Assembly Refit**

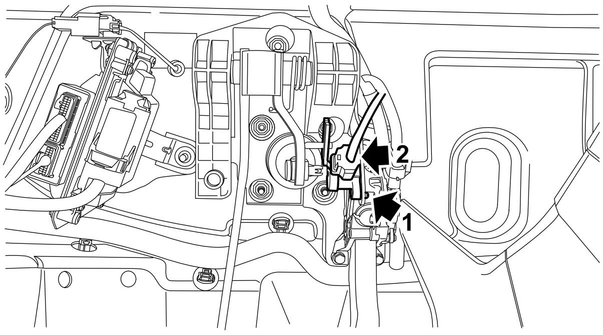
7. Fit the accelerator pedal.

☞**Accelerator Pedal Refit**

Brake Pedal Position Sensor

Remove

1. Disconnect the negative battery cable.
2. Disconnect the harness connector of the brake pedal position sensor (2).



S2413570

3. Loosen the fixing bolt and remove the brake pedal position sensor.

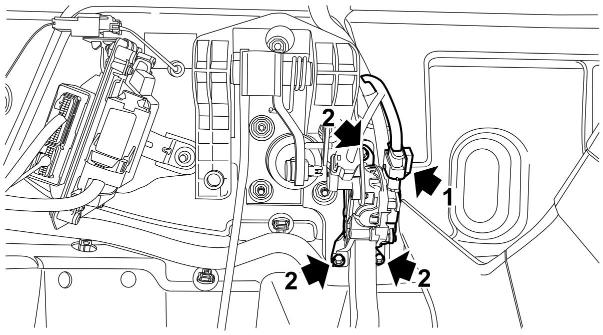
Refit

1. Locate the brake pedal position sensor to the pedal bracket and fix the fixing bolt.
2. Connect the harness connector of the brake pedal position sensor.
3. Connect the negative battery cable.
4. Operate self-learning for the brake pedal position sensor. Refer to Module Self-learning and Programming Manual "Gate Way (GW) Self-learning".

Accelerator Pedal

Remove

1. Disconnect the negative battery cable.
2. Disconnect the accelerator pedal harness connector (1).
3. Remove and discard 3 bolts (2) fixing the accelerator pedal assembly to the brake pedal.



S2413571

4. Remove the accelerator pedal assembly from the vehicle.

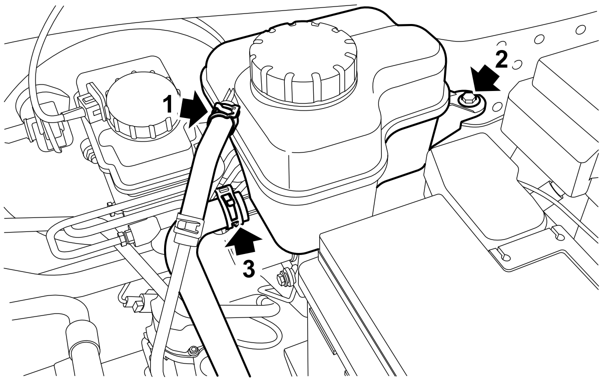
Refit

1. Fix the accelerator pedal assembly to the brake pedal, fit 3 new bolts and tighten them to **4–5Nm**.
2. Connect the accelerator pedal harness connector.
3. Connect the negative battery cable.

Master Cylinder Brake Hard Pipe

Remove

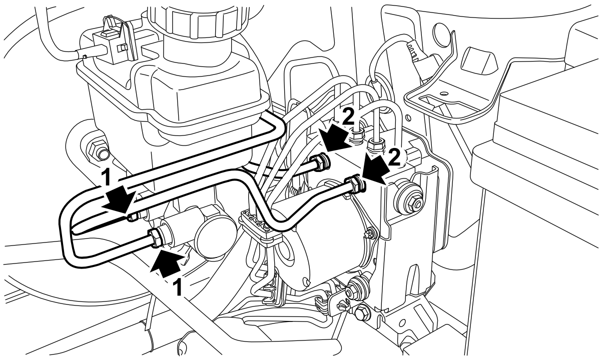
1. Disconnect the negative battery cable.
2. Remove 1 bolt (2) fixing the coolant expansion tank to the bracket, and remove the coolant expansion tank.



S3123601

3. Put the cloth under the brake modulator and master cylinder to absorb the spilled brake fluid.
4. Remove 2 fittings (1) fixing the brake hard pipe to the brake master cylinder.
5. Remove 2 fittings (2) fixing the brake hard pipe to the brake modulator.

Caution: Before disconnecting or removing components, ensure the immediate area around joint faces and connections are clean. Plug open connections to prevent contamination.



S2413547

6. Remove the master cylinder brake hard pipe.

Refit

1. Locate 2 brake hard pipe fittings to the brake modulator, and tighten the 2 fittings to **15–19Nm**.
2. Locate 2 brake hard pipe fittings to the brake master cylinder, and tighten the 2 fittings to **15–19Nm**.
3. Take the cloth for absorbing spilled brake fluid away and dispose of it.
4. Locate the coolant expansion tank to the bracket, fit 1

bolt and tighten it to **4–6Nm**.

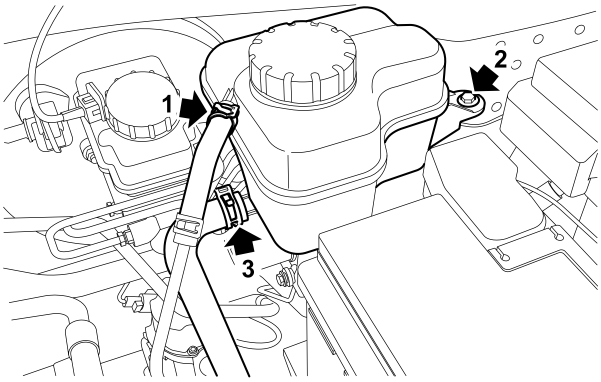
5. Connect the negative battery cable.
6. Drain the brake system.

☞**Brake System Drain**

Front Left Brake Hard Pipe

Remove

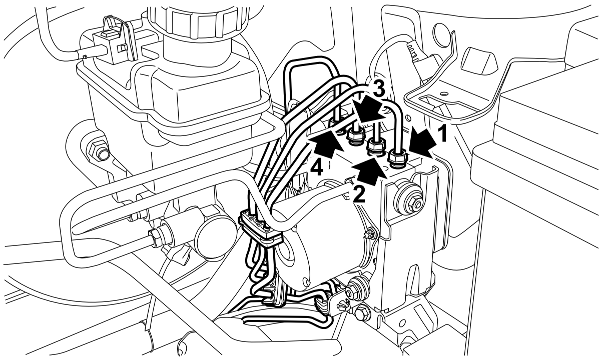
1. Disconnect the negative battery cable.
2. Remove 1 bolt (2) fixing the coolant expansion tank to the bracket, and remove the coolant expansion tank.



S3123601

3. Put the cloth at the front left brake hard pipe fitting to absorb the spilled brake fluid.
4. Remove the fitting nut (3) fixing the front left brake hard pipe to the brake modulator, and disconnect the pipe connection.

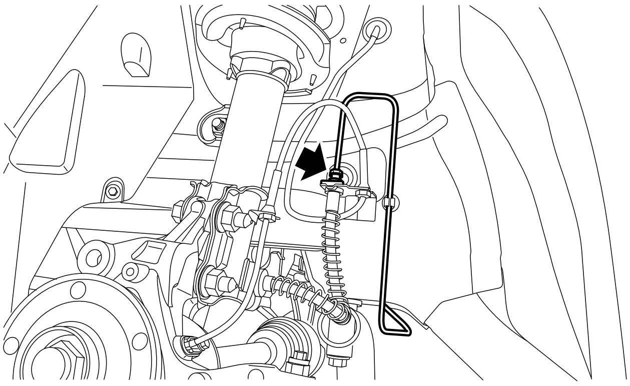
Caution: Before disconnecting or removing components, ensure the immediate area around joint faces and connections are clean. Plug open connections to prevent contamination.



S2413561

5. Remove the fitting nut fixing the front left brake hard pipe to the front left brake hose, and disconnect the pipe connection.

Caution: Before disconnecting or removing components, ensure the immediate area around joint faces and connections are clean. Plug open connections to prevent contamination.



S2413567

6. Disconnect the front left brake hard pipe from the clip on the body.
7. Remove the front left brake hard pipe from the vehicle.

Refit

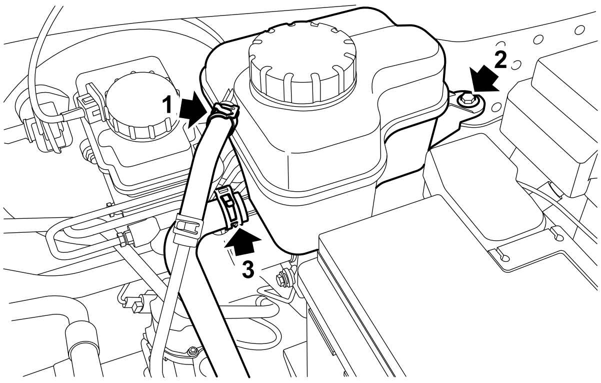
1. Locate the front left brake hard pipe to the body and fasten it with clips.
2. Locate the front left brake hard pipe fitting to the front left brake hose, and tighten the fitting nut to **15–19Nm**.
3. Locate the front left brake hard pipe to the brake modulator, and tighten the fitting nut to **15–19Nm**.
4. Take the cloth for absorbing spilled brake fluid away and dispose of it.
5. Locate the coolant expansion tank to the bracket, fit 1 bolt and tighten it to **4–6Nm**.
6. Connect the negative battery cable.
7. Drain the brake system.

☞**Brake System Drain**

Front Right Brake Hard Pipe

Remove

1. Remove 1 bolt (2) fixing the coolant expansion tank to the bracket, and remove the coolant expansion tank.



S3123601

2. Remove the manual service switch.

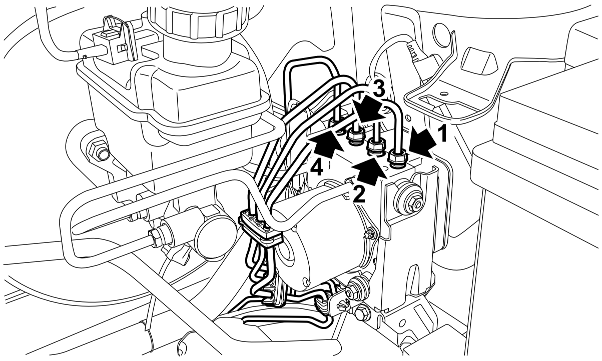
☞**Manual Service Disconnect Remove**

3. Remove the front bottom deflector.

☞**Bottom Deflector Remove**

4. Put the cloth at the front right brake hard pipe fitting to absorb the spilled brake fluid.
5. Remove the fitting nut (2) fixing the front right brake hard pipe to the brake modulator, and disconnect the pipe connection.

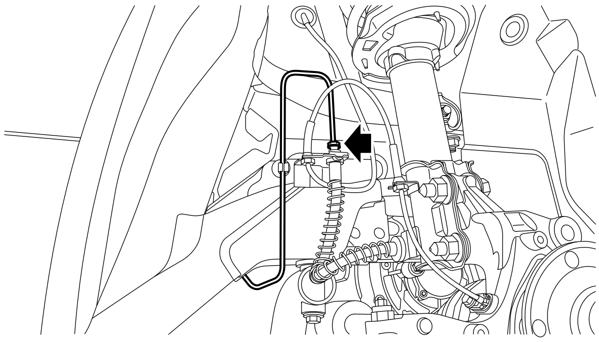
Caution: Before disconnecting or removing components, ensure the immediate area around joint faces and connections are clean. Plug open connections to prevent contamination.



S2413561

6. Remove the fitting nut fixing the front right brake hard pipe to the front right brake hose, and disconnect the pipe connection.

Caution: Before disconnecting or removing components, ensure the immediate area around joint faces and connections are clean. Plug open connections to prevent contamination.



S2413537

7. Disconnect the front right brake hard pipe from the clip on the body.
8. Carefully pull the front right brake hard pipe out of the vehicle.

Refit

1. Locate the front right brake hard pipe to the body and fasten it with clips.
2. Locate the front right brake hard pipe fitting to the front right brake hose, and tighten the fitting nut to **15–19Nm**.
3. Locate the front right brake hard pipe to the brake modulator, and tighten the fitting nut to **15–19Nm**.
4. Take the cloth for absorbing spilled brake fluid away and dispose of it.
5. Fit the front bottom deflector.

Bottom Deflector Refit

6. Fit the manual service switch.

Manual Service Disconnect Refit

7. Locate the coolant expansion tank to the bracket, fit 1 bolt and tighten it to **4–6Nm**.
8. Drain the brake system.

Brake System Drain

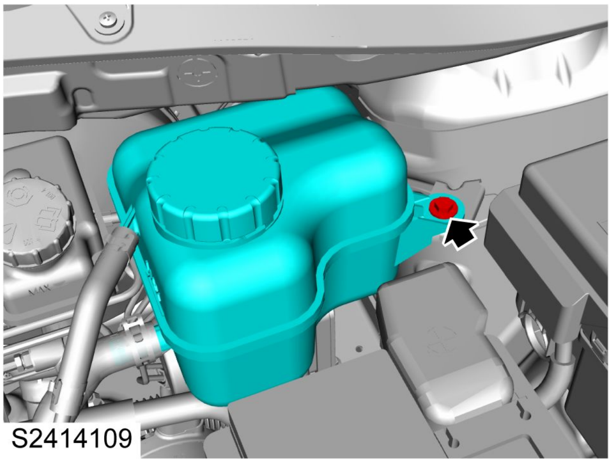
Connecting Pipe - ABS to Rear Brake Pipe

Remove

1. Remove the manual service disconnect.

Manual Service Disconnect Remove

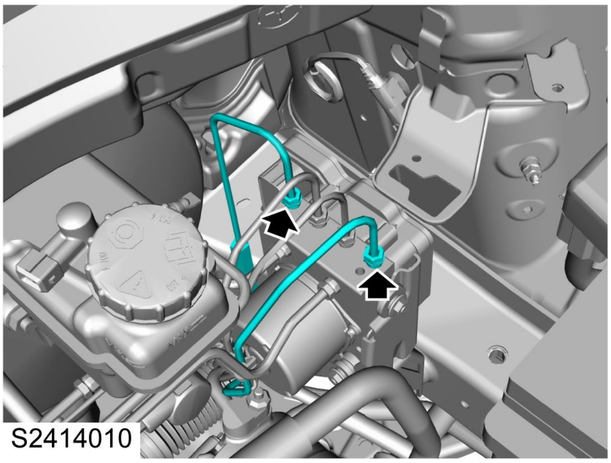
2. Remove 1 bolt fixing the coolant expansion tank to the bracket, and remove the coolant expansion tank.



S2414109

3. Place a suitable absorbent cloth under the brake modulator to absorb the spilled brake fluid.
4. Remove 2 fitting nuts fixing the connecting pipe from brake modulator to rear brake pipe to the brake modulator.

Caution: Before disconnecting or removing components, ensure the immediate area around joint faces and connections are clean. Plug open connections to prevent contamination.

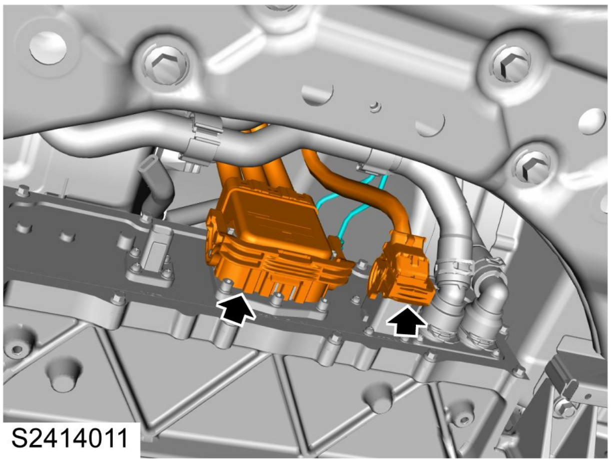


S2414010

5. Disconnect the brake modulator from the connecting pipe, and plug the opening of the brake pipe and the brake modulator to avoid any brake fluid loss and contamination.
6. Remove the front, middle and bottom deflectors.

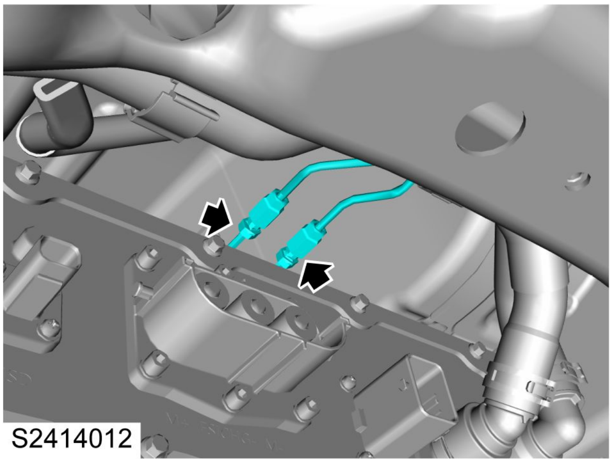
Bottom Deflector Remove

7. Disconnect the harness connector of the high-voltage battery pack.


S2414011

8. Place a suitable absorbent cloth right under the brake pipe fitting to absorb the spilled brake fluid.
9. Remove 2 fitting nuts fixing the connecting pipe from brake modulator to rear brake pipe to the rear brake pipe.

Caution: Before disconnecting or removing components, ensure the immediate area around joint faces and connections are clean. Plug open connections to prevent contamination.


S2414012

10. Disconnect the pipe fitting, and plug the opening of the brake pipe for the avoidance of brake fluid loss or contamination.
11. Disconnect the clip from the brake pipe.
12. Carefully pull the connecting pipe from brake modulator to rear brake pipe out of the vehicle.

Refit

1. Locate the connecting pipe from brake modulator to rear brake pipe to the body and secure it with clips.
2. Remove the plug from the pipe fitting, locate the connecting pipe fitting from brake modulator to rear brake pipe to the rear brake pipe, and tighten the fitting nut to **13–15Nm**.
3. Take away the absorbent cloth and dispose of it.
4. Connect the harness of the high-voltage battery pack.
5. Fit the front, middle and bottom deflectors.

☞ **Bottom Deflector Refit**

6. Remove the plug from the pipe fitting, locate the connecting pipe fitting from brake modulator to rear brake pipe to the brake modulator, and tighten the fitting nut to **15–19Nm**.
7. Take away the absorbent cloth and dispose of it.
8. Locate the coolant expansion tank to the bracket, fit 1 bolt and tighten it to **4–6Nm**.
9. Fit the manual service disconnect.

☞ **Manual Service Disconnect Refit**

10. Bleed the brake system.

☞ **Brake System Bleeding**

Rear Left Brake Pipe

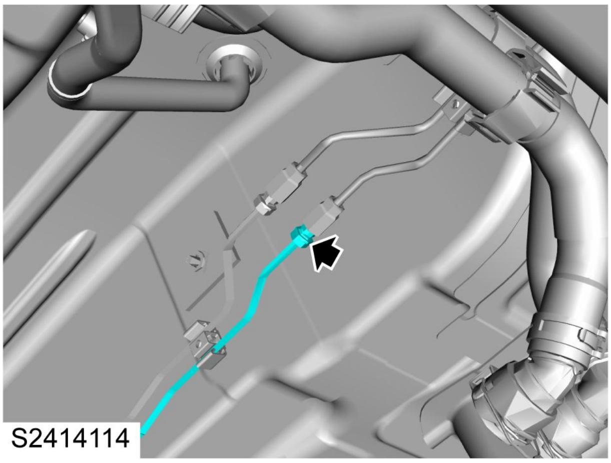
Remove

1. Remove the high-voltage battery.

☞**High-voltage Battery Pack Remove**

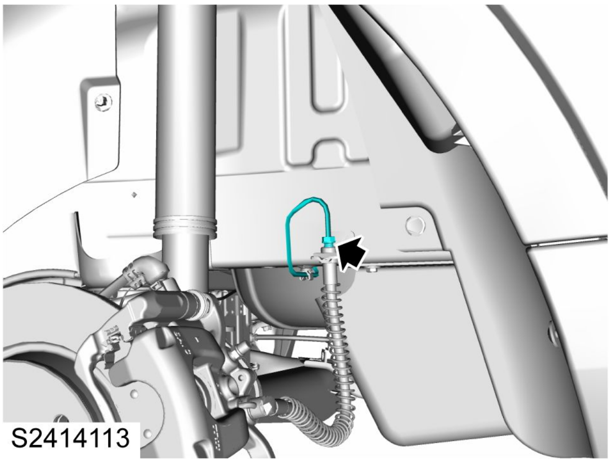
2. Prepare an appropriate container to collect the spilled brake fluid.
3. Remove the fitting nuts fixing the connecting pipe from brake modulator to rear brake pipe to the rear left brake pipe.

Caution: Before disconnecting or removing components, ensure the immediate area around joint faces and connections are clean. Plug open connections to prevent contamination.



4. Disconnect the pipe fitting, and plug the opening of the brake pipe for the avoidance of brake fluid loss or contamination.
5. Remove the fitting nut fixing the rear left brake pipe to the rear left brake hose, and disconnect the pipeline.

Caution: Before disconnecting or removing components, ensure the immediate area around joint faces and connections are clean. Plug open connections to prevent contamination.



6. Disconnect the clip fixing the rear left brake pipe to the body.
7. Carefully pull the rear left brake pipe out of the vehicle.

Refit

1. Locate the rear left brake pipe to the clips on the body and fasten it.
2. Remove the plug from the pipeline, locate the rear left brake pipe fitting to the rear left brake hose, and tighten the fitting nut to **15–19Nm**.
3. Remove the plug from the pipeline, fix the connecting pipe from brake modulator to rear brake pipe to the rear left brake pipe, and tighten the fitting nut to **13–15Nm**.
4. Take the container for collecting brake fluid away, and clean it.
5. Fit the high-voltage battery.

☞**High-voltage Battery Pack Refit**

6. Bleed the brake system.

☞**Brake System Bleeding**

Rear Right Brake Pipe

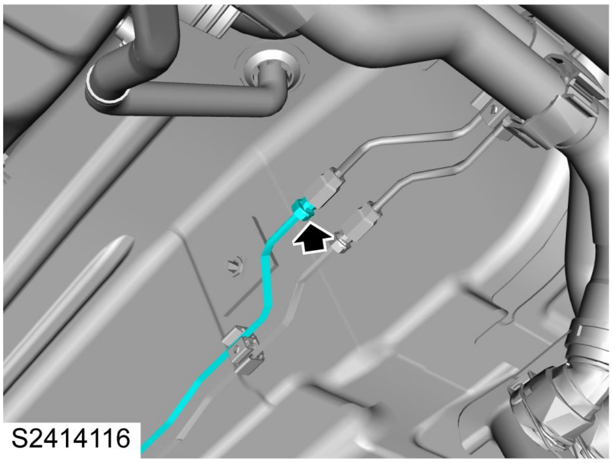
Remove

1. Remove the high-voltage battery.

☞**High-voltage Battery Pack Remove**

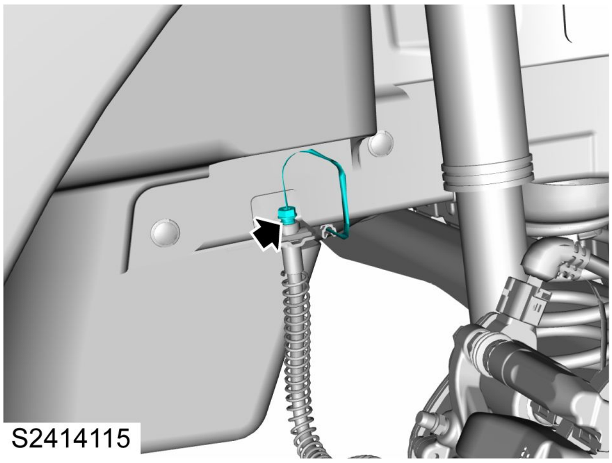
2. Prepare an appropriate container to collect the spilled brake fluid.
3. Remove the nut fixing the connecting pipe from brake modulator to rear brake pipe to the rear right brake pipe.

Caution: Before disconnecting or removing components, ensure the immediate area around joint faces and connections are clean. Plug open connections to prevent contamination.



4. Disconnect the pipe fitting, and plug the opening of the brake pipe for the avoidance of brake fluid loss or contamination.
5. Remove the fitting nut fixing the rear right brake pipe to the rear right brake hose, and disconnect the pipeline.

Caution: Before disconnecting or removing components, ensure the immediate area around joint faces and connections are clean. Plug open connections to prevent contamination.



6. Disconnect the clip fixing the rear right brake pipe to the body.
7. Carefully pull the rear right brake pipe out of the vehicle.

Refit

1. Locate the rear right brake pipe to the clips on the body and fasten it.
2. Remove the plug from the pipeline, locate the rear right brake pipe fitting to the rear right brake hose, and tighten the fitting nut to **15–19Nm**.
3. Remove the plug from the pipeline, fix the connecting pipe from brake modulator to rear brake pipe to the rear right brake pipe, and tighten the fitting nut to **13–15Nm**.
4. Take the container for collecting brake fluid away, and clean it.
5. Fit the high-voltage battery.

☞**High-voltage Battery Pack Refit**

6. Bleed the brake system.

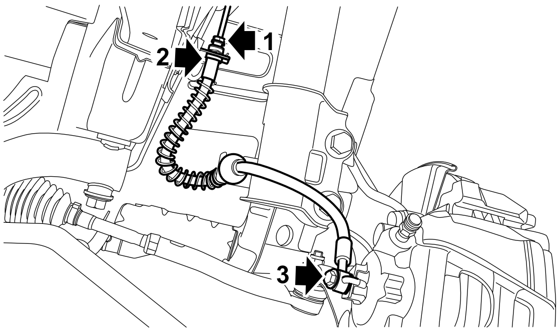
☞**Brake System Bleeding**

Front Brake Hose

Remove

1. Raise the vehicle to the appropriate height.
2. Put the cloth at the front brake hose fitting to absorb the spilled brake fluid.
3. Remove the fitting nut (1) fixing the front brake hard pipe to the front brake hose, and disconnect the pipe connection.
4. Remove the pin (2) fixing the front brake hose to the body bracket.
5. Remove 1 bolt and washer (3) fixing the front brake hose to the front brake caliper housing, and discard the washer.

Caution: Before disconnecting or removing components, ensure the immediate area around joint faces and connections are clean. Plug open connections to prevent contamination.



S2413552

6. Disconnect the front brake hose from the shock absorber strut.
7. Remove the front brake hose.

Refit

1. Clean the brake pipeline fittings.
2. Locate the front brake hose to the shock absorber strut.
3. Locate the front brake hose to the front brake caliper housing, fit 1 bolt and new washer, and tighten it to **28–32Nm**.
4. Locate the front brake hose to the body bracket, fit the pin and fasten it in place.
5. Locate the front brake hard pipe fitting to the front brake hose, and tighten the fitting nut to **15–19Nm**.
6. Take the cloth for absorbing spilled brake fluid away and dispose of it.
7. Lower the vehicle.
8. Bleed the brake system.

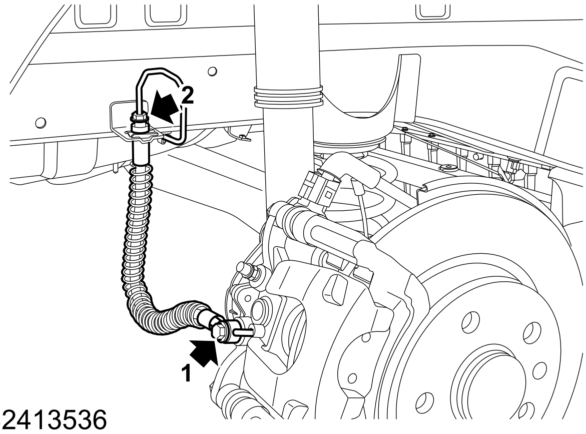
☞**Brake System Bleed**

Rear Brake Hose

Remove

1. Raise the vehicle to the appropriate height.
2. Put the cloth at the rear brake hose fitting to absorb the spilled brake fluid.
3. Remove the fitting nut (2) fixing the rear brake hard pipe to the rear brake hose, and disconnect the pipe connection.
4. Remove 1 bolt and washer (1) fixing the rear brake hose to the rear brake caliper housing, and discard the washer.

Caution: Before disconnecting or removing components, ensure the immediate area around joint faces and connections are clean. Plug open connections to prevent contamination.



S2413536

5. Loosen the rear brake hose pin, and remove the rear brake hose.

Refit

1. Clean the brake pipeline fittings.
2. Locate the rear brake hose to the body bracket, fit the pin and fasten it in place.
3. Locate the rear brake hose to the rear brake caliper housing, fit 1 bolt and new washer, and tighten it to **28–32Nm**.
4. Locate the rear brake hard pipe fittings to the rear brake hose, and tighten the fitting nut to **15–19Nm**.
5. Take the cloth for absorbing spilled brake fluid away and dispose of it.
6. Lower the vehicle.
7. Bleed the brake system.

☞**Brake System Bleed**

Brake System Bleed

Drain

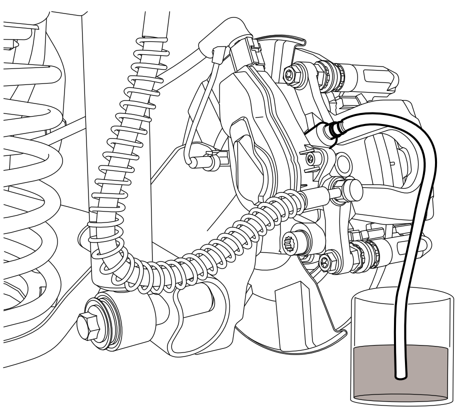
1. Refill the brake fluid reservoir to the MAX mark.

Caution: During the entire bleeding process, ensure the new brake fluid level in the brake reservoir is between the Min. and Max. position.

2. Remove the wheels.

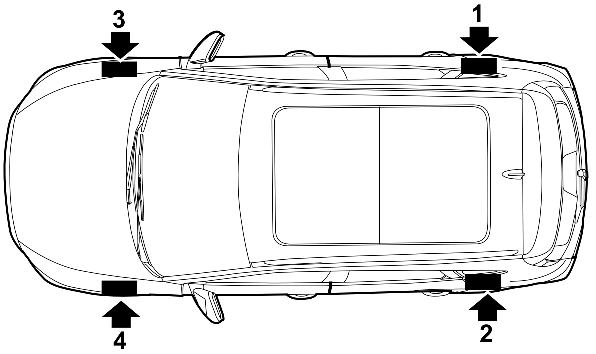
Wheels Remove

3. Raise the vehicle to the appropriate height.
4. Remove the bleed screw dust cover at the rear right brake caliper, and fit the hose onto the bleed screw. Immerse the free end of the hose into the container with fresh brake fluid.



S2413566

5. Depress the brake pedal for several times and apply stable pressure.
6. Release the bleed screw to separate the brake fluid and air. Allow the pedal to return without any external force.
7. Depress the brake pedal to the maximum travel steadily, and allow it to return without any external force. Repeat the operation for several times until the air-free brake fluid flows into the container, then fix the brake pedal to the maximum travel, tighten the front bleed screw to **16–18Nm** and the rear bleed screw to **9–13Nm**.
8. Remove the hose from the bleed screw and fit the bleed screw dust cover.
9. Repeat the bleeding procedures for the remaining 3 brake calipers in the following sequence: rear left - front right - front left.



S2413543

10. Lower the vehicle.
11. Refill the brake fluid reservoir to the MAX mark.
12. Apply pressure to the brake pedal and check for leakage.
13. Fit the wheels.

Wheels Refit

14. Test the vehicle on the road. Check the minimum travel of the brake pedal when the brake is in effect.

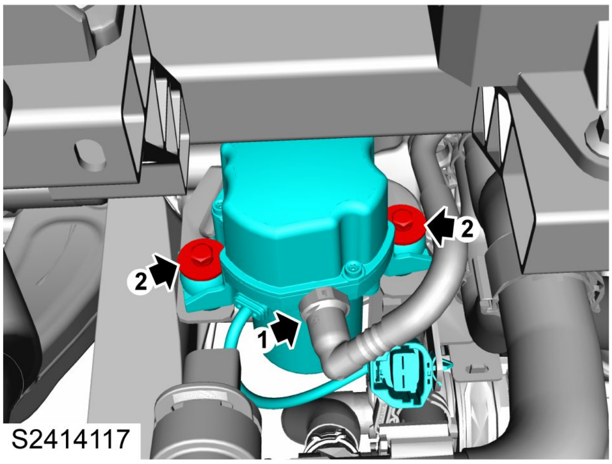
Electric Vacuum Pump

Remove

1. Remove the manual service disconnect.

☞**Manual Service Disconnect Remove**

2. Lower the vehicle.
3. Disconnect the electric vacuum pump harness from the water temperature sensor harness connector.
4. Disconnect the vacuum brake hose from the electric vacuum pump (1).
5. Remove 2 bolts (2) fixing the electric vacuum pump to the bracket.



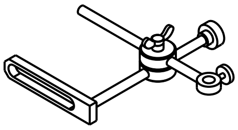
6. Take out the electric vacuum pump at the proper position.

Refit

1. Locate the electric vacuum pump to the bracket, fit 2 bolts and tighten them to **7–10Nm**.
2. Connect the vacuum brake hose to the electric vacuum pump.
3. Connect the electric vacuum pump harness to the water temperature sensor harness connector.
4. Lift the vehicle.
5. Fit the manual service disconnect.

☞**Manual Service Disconnect Refit**

Special Tools

Tool Number	Description	Picture
TCH00022	Brake disc runout test kit	 TCH00022

Park Brake

Specifications

Torque

Description	Value
Bolts-Rear EPB motor to caliper	10–13Nm

Service Procedures

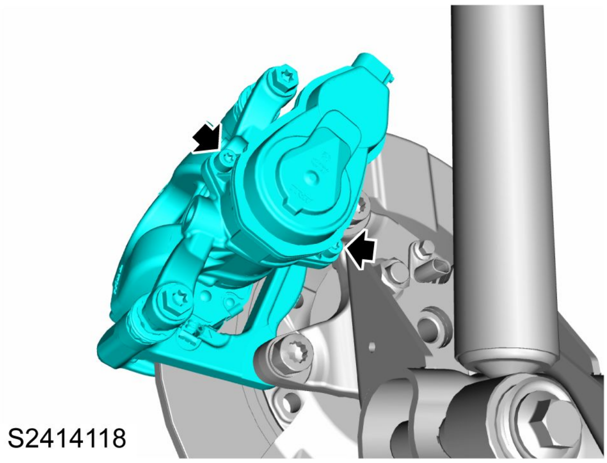
Electronic Parking Brake Motor

Remove

1. Use a scan tool to perform an electronic parking brake release.
2. Disconnect the negative battery cable.
3. Remove the rear wheels.

Wheels Remove

4. Disconnect the parking motor harness connector.
5. Remove 2 bolts fixing the parking motor to the rear brake caliper housing.



6. Remove the parking motor.

Refit

1. Locate the parking motor to the rear brake caliper housing, fit 2 bolts and tighten them to **10–13Nm**.
2. Connect the parking motor harness connector.
3. Fit the rear wheels.

Wheels Refit

4. Connect the negative battery cable.
5. Perform a self-learning for the parking motor. Refer to Module Self-learning and Programming Manual, "Stability Control System Self-learning".

Brake Module

Specifications

Torque

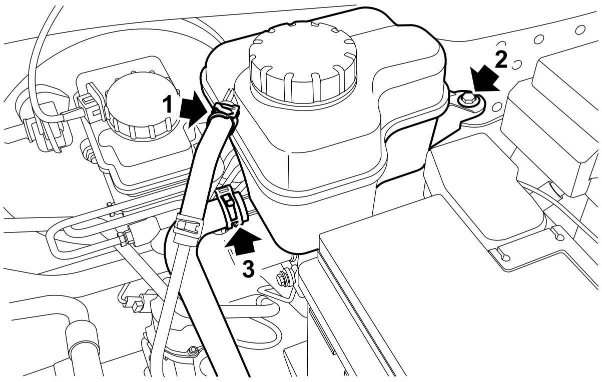
Description	Value
Bolts-ABS modulator to assembly	7–10Nm
Nuts-Brake pipe to ABS modulator	15–19Nm
Bolt- expansion tank to body	4–6Nm
Bolts-Front wheel speed sensor to steering bracket	7–10Nm
Bolt-Rear wheel speed sensor to rear wheel support	7–10Nm

Service Procedures

Brake Modulator

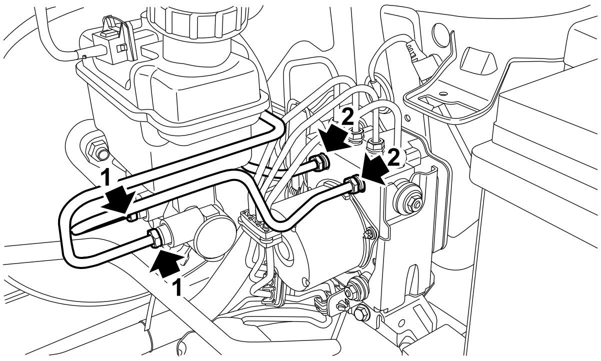
Remove

1. Disconnect the negative battery cable.
2. Remove 1 bolt (2) fixing the coolant expansion tank to the bracket, and remove the coolant expansion tank.



S3123601

3. Put the cloth under the brake modulator to absorb the spilled brake fluid.
4. Disconnect the harness connector from the brake modulator.
5. Remove 2 fitting nuts (2) fixing the master cylinder brake hard pipe to the brake modulator.

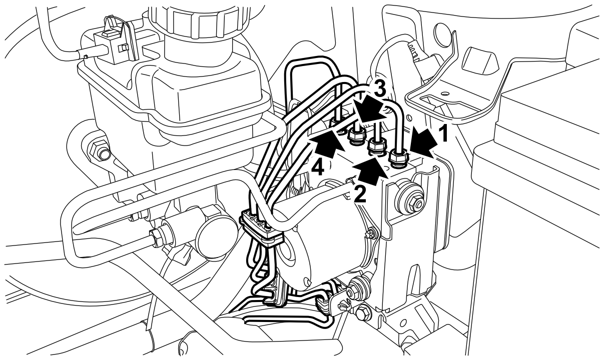


S2413547

6. Disconnect the pipeline fitting, plug the opening of the brake hard pipe for the avoidance of brake fluid drain and contamination.

Caution: Before disconnecting or removing components, ensure the immediate area around joint faces and connections are clean. Plug open connections to prevent contamination.

7. Mark the locations of 4 oil outlet pipes on the brake modulator for assembling, and remove the brake hard pipe oil outlet pipe from the brake modulator in the sequence of 1-4.

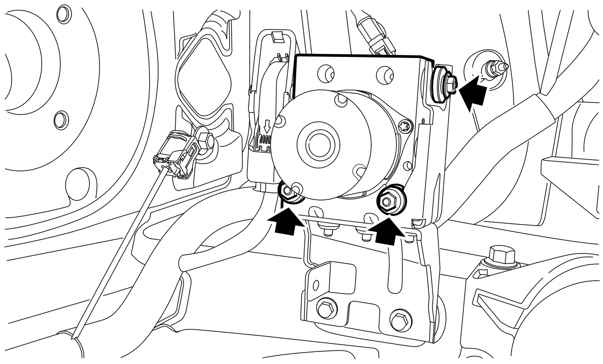


S2413561

8. Disconnect the pipeline fitting, plug the opening of the brake hard pipe for the avoidance of brake fluid drain and contamination.

Caution: Before disconnecting or removing components, ensure the immediate area around joint faces and connections are clean. Plug open connections to prevent contamination.

9. Remove 3 nuts fixing the brake modulator to the brake modulator bracket.



S2413542

10. Remove the brake modulator.

Refit

1. Fix the brake modulator to the brake modulator bracket, fit 3 nuts and tighten them to **7–10Nm**.
2. Clean the oil outlet brake pipe fittings.
3. Remove the plug, connect the brake pipes to the brake modulator by assembly mark, and ensure that the pipes are connected to the correct ports. Tighten the brake hard pipe fittings to **15–19Nm**.
4. Clean the oil inlet brake pipe fittings.
5. Locate the master cylinder brake hard pipe fitting to the brake modulator, and tighten the fitting nut to **15–19Nm**.
6. Connect the harness connector to the brake modulator.
7. Take the cloth for absorbing spilled brake fluid away

and dispose of it.

8. Locate the coolant expansion tank to the bracket, fit 1 bolt and tighten it to **4–6Nm**.
9. Connect the negative battery cable.
10. Drain the brake system.

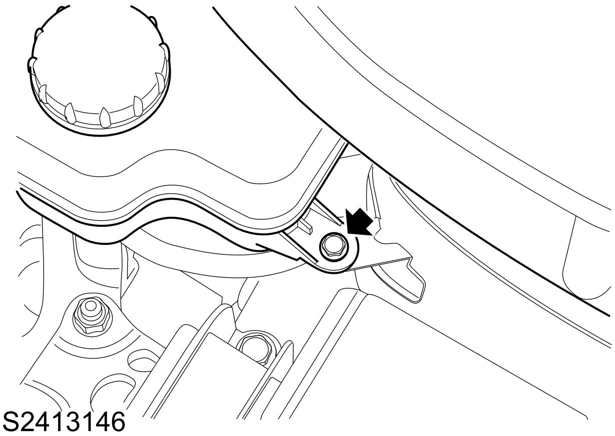
☞**Brake System Drain**

11. Programme and encode the brake modulator. Refer to Module Self-learning and Programming Manual, "Dynamic Stability Control System (SCS)".

Front Wheel Speed Sensor

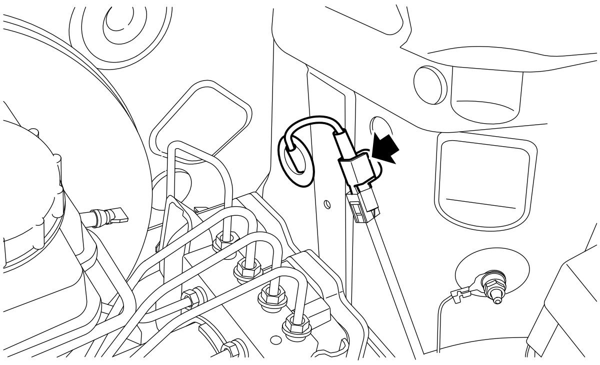
Remove

1. Disconnect the negative battery cable.
2. Remove 1 bolt fixing the coolant expansion tank to the bracket, and remove the coolant expansion tank.



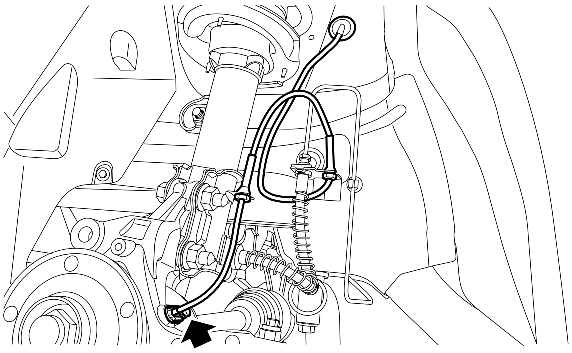
S2413146

3. Disconnect the harness connector of the front wheel speed sensor.



S2413533

4. Raise the vehicle on a lift to an appropriate height.
5. Remove 1 bolt fixing the front wheel speed sensor to the steering knuckle.



S2413534

6. Loosen the harness clip of the front wheel speed sensor to remove the front wheel speed sensor.

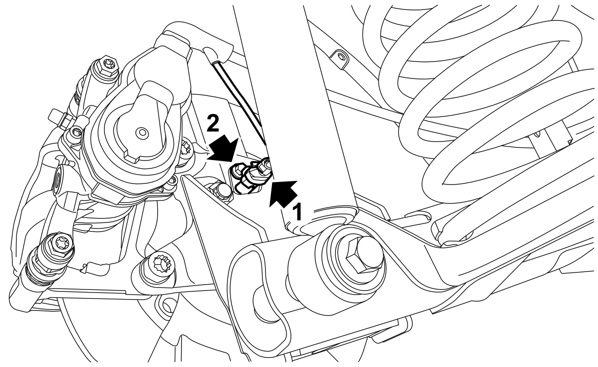
Refit

1. Clean the contact surface of the front wheel speed sensor and the steering knuckle.
2. Fit the front wheel speed sensor harness to the clip and ensure that the harness route is correct.
3. Locate the front wheel speed sensor to the steering knuckle, fit 1 bolt and tighten it to **7–10Nm**.
4. Lower the vehicle.
5. Connect the harness connector of the front wheel speed sensor.
6. Locate the coolant expansion tank to the bracket, fit 1 bolt and tighten it to **4–6Nm**.
7. Connect the negative battery cable.

Rear Wheel Speed Sensor

Remove

1. Disconnect the negative battery cable.
2. Raise the vehicle on a lift to an appropriate height.
3. Disconnect the harness connector (1) of the rear wheel speed sensor.
4. Remove 1 bolt (2) fixing the rear wheel speed sensor to the rear spindle.



S2413564

5. Remove the rear wheel speed sensor.

Refit

1. Clean the contact surface of the rear wheel speed sensor and the rear spindle.
2. Locate the rear wheel speed sensor to the rear spindle, fit 1 bolt and tighten it to **7–10Nm**.
3. Connect the harness connector of the rear wheel speed sensor.
4. Lower the vehicle.
5. Connect the negative battery cable.

Drive Axle

Specifications

Torque

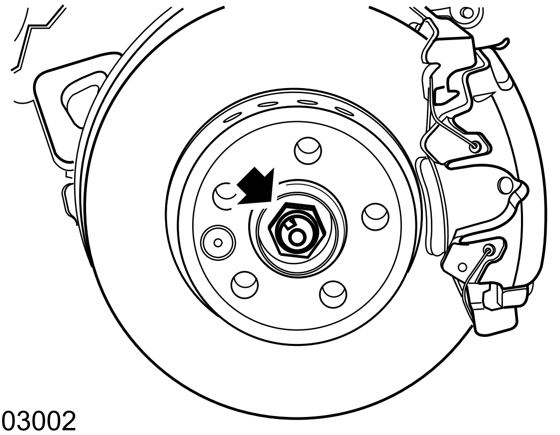
Description	Value
Bolts-Front lower arm bulb to Front wheel carrier	55–65Nm
Nuts-Front shock absorber assembly to front knuckle	140–170Nm
Nuts-Steering rack outer tie rod to steering arm	28–32Nm
Nuts-Front wheel hub	345–375Nm

Service Procedures

Right Front Drive Shaft Assembly

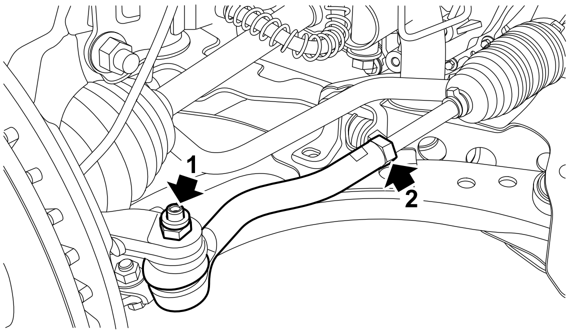
Remove

1. Lift the vehicle with a lift.
2. Pry up the locking device of the front drive half-axle nut, and press down the brake pedal. Remove the front drive half-axle nut and discard it.



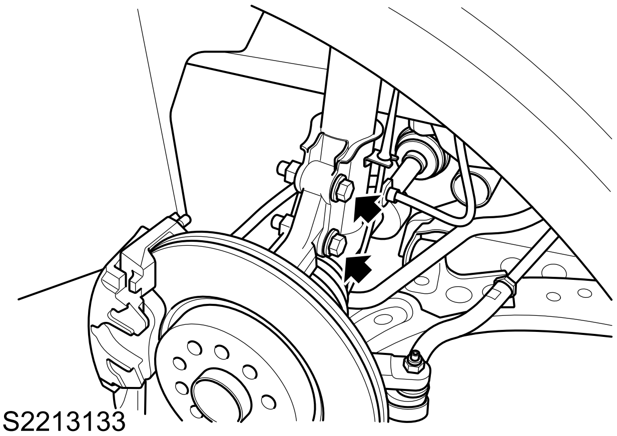
S303002

3. Remove and discard 1 nut (1) fixing the ball head of steering gear outer tie rod to the steering knuckle.



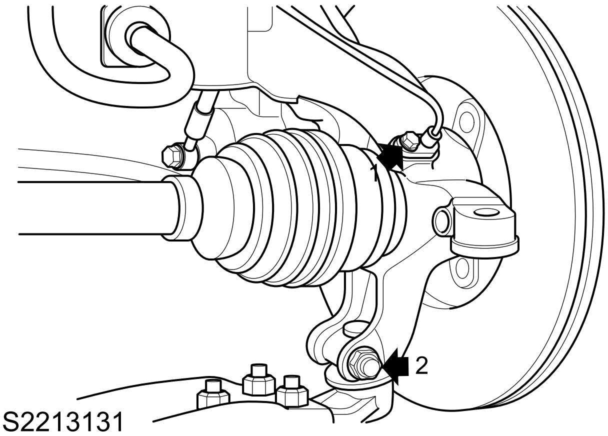
S2113577

4. Remove and discard 2 bolts and nuts fixing the front steering knuckle to the front shock absorber assembly, then disconnect the connection.



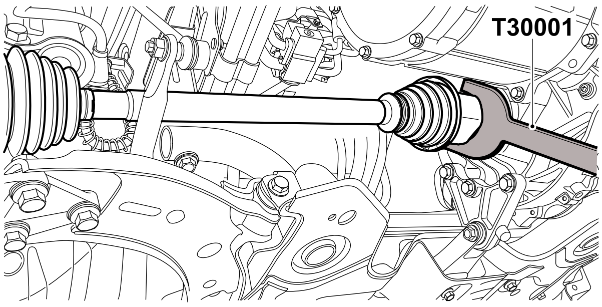
S2213133

5. Remove the nut fixing the lower arm outer ball joint on front steering knuckle.



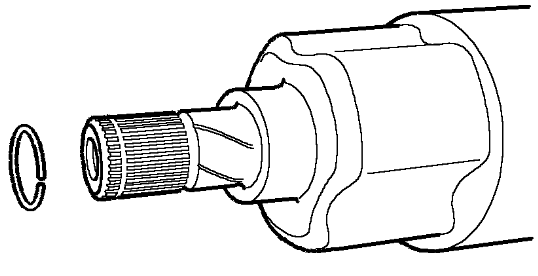
S2213131

6. Pull the hub outward and remove the right front drive half-shaft assembly from the hub.
7. Prepare suitable containers to collect spilled liquids.
8. Use special tools**T30001** to separate right front drive half axle from transmission.



S9413168

9. Remove right front drive shaft assembly. Remove the drive half-shaft spring retaining ring and discard it.



S303012

Refit

1. Refit a new spring retaining ring on the right front drive shaft.
2. Clean the junctions between the right front drive shaft

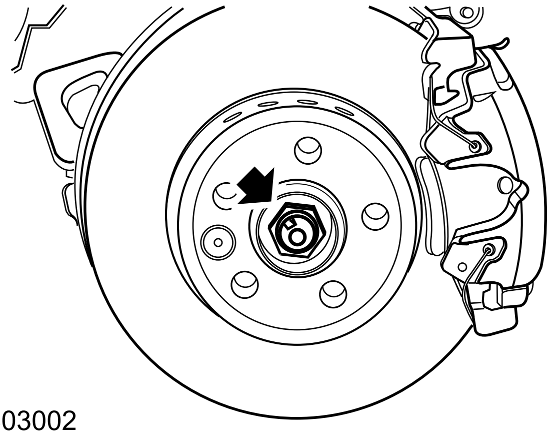
end and hub/differential internal.

3. Refit the right front drive shaft onto the differential and ensure they are fully engaged.
4. Connect front lower arm outer ball joint to steering knuckle. Refit the new bolt and nut, and tighten them to**55–65Nm**.
5. Connect the front steering knuckle to the front shock absorber assembly, fit 2 new bolts and nuts, and tighten them to**140–170Nm**.
6. Locate the ball head of steering gear outer tie rod to the steering knuckle, fit 1 new nut and tighten it to**28–32Nm**.
7. Locate the front drive half axle on the front hub assembly, install a new nut locking device, step on the brake pedal, and tighten the nut to**345–375Nm**.
8. Lock the nut to the right front drive half axle.
9. Remove the container for collecting oil and clean it.

Left Front Drive Shaft Assembly

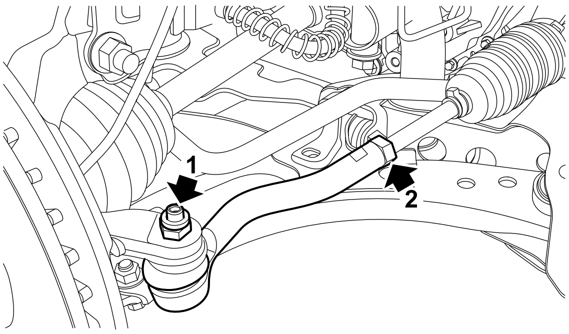
Remove

1. Lift the vehicle with a lift.
2. Pry up the locking device of the front drive half-axle nut, and press down the brake pedal. Remove the front drive half-axle nut and discard it.



S303002

3. Remove and discard 1 nut (1) fixing the ball head of steering gear outer tie rod to the steering knuckle.



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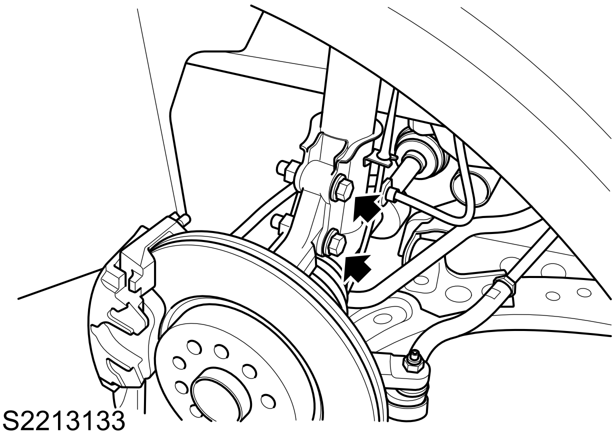
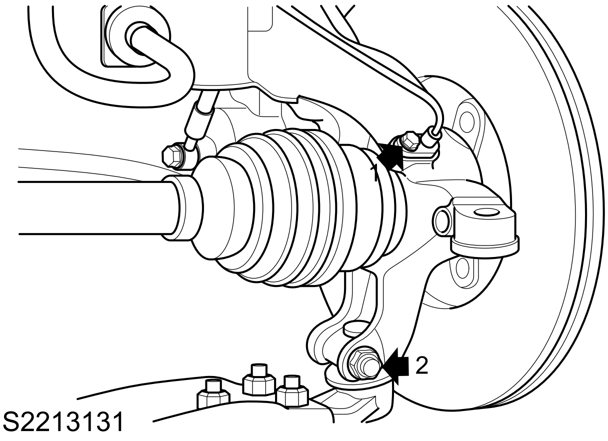
4. Remove and discard 2 bolts and nuts fixing the front steering knuckle to the front shock absorber assembly, then disconnect the connection.



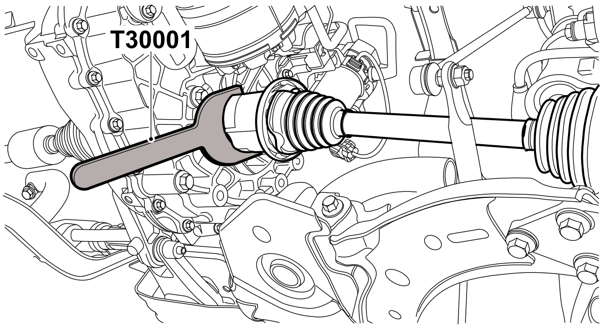
S2213133

5. Remove the nut fixing the lower arm outer ball joint on front steering knuckle.



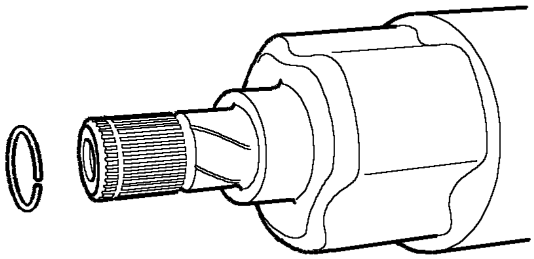
S2213131

6. Pull the hub outward and remove the left front drive half-shaft assembly from the hub.
7. Prepare suitable containers to collect spilled liquids.
8. Use special tools**T30001** to separate left front drive half axle from transmission.



S9413169

9. Remove left front drive shaft assembly. Remove the drive half-shaft spring retaining ring and discard it.



S303012

Refit

1. Refit a new spring retaining ring on the left front drive shaft.
2. Clean the junctions between the left front drive shaft end and hub/differential internal.
3. Refit the left front drive shaft onto the differential and ensure they are fully engaged.
4. Connect front lower arm outer ball joint to steering knuckle. Refit the new bolt and nut, and tighten them to**55–65Nm**.
5. Connect the front steering knuckle to the front shock absorber assembly, fit 2 new bolts and nuts, and tighten them to**140–170Nm**.
6. Locate the ball head of steering gear outer tie rod to the steering knuckle, fit 1 new nut and tighten it to**28–32Nm**.
7. Locate the front drive half axle on the front hub assembly, install a new nut locking device, step on the brake pedal, and tighten the nut to**345–375Nm**.
8. Lock the nut to the left front drive half axle.
9. Remove the container for collecting oil and clean it.

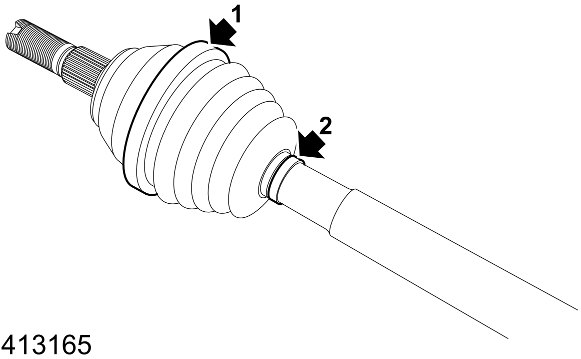
Constant-velocity Joint Assembly

Remove

1. Remove the drive shaft assembly.

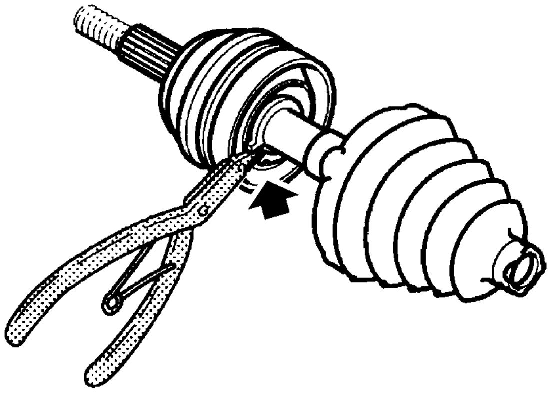
☞**Right Front Drive Shaft Assembly Remove**

2. Fix the drive shaft in a vice.
3. Loosen and scrap 2 clamps (1) and (2) of assembly gaiter.



S9413165

4. Slide the assembly gaiter along the drive shaft to check the internal of constant-velocity joint.
5. Clamp the wire circlip of constant velocity universal joint with nipper pliers.



S303014

6. Remove the constant velocity joint assembly from the drive shaft. Remove the wire circlip from the drive shaft and discard it.

Refit

1. Clean the drive shaft and gaiter.
2. Refit a new spring collar onto the drive shaft.
3. Locate the new constant velocity joint assembly onto the drive shaft, press the circlip in the groove with the appropriate tool to completely push the constant velocity joint into the drive shaft.
4. Apply grease onto the constant-velocity joint assembly.
5. Locate the gaiter on the constant-velocity joint, and fix it with new clamps.
6. Refit the drive shaft assembly.

☞**Right Front Drive Shaft Assembly Refit**

Constant-velocity Joint Assembly Gaiter

Remove

1. Remove the constant-velocity joint assembly.

☞**Constant-velocity Joint Assembly Remove**

2. Remove the constant-velocity joint assembly gaiter from the drive shaft.

Refit

1. Refit a new constant-velocity joint assembly gaiter onto the drive shaft.
2. Refit the constant-velocity joint assembly.

Constant-velocity Joint Assembly Refit

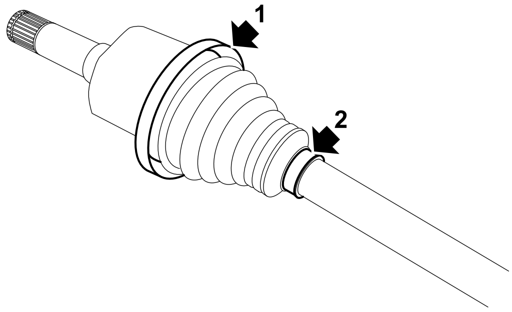
Tripode Shaft Assembly

Remove

1. Remove the drive shaft assembly.

☞**Right Front Drive Shaft Assembly Remove**

2. Fix the drive shaft in a vice.
3. Loosen and scrap 2 clamps (1) and (2) of assembly gaiter.



S9413167

4. Remove the tripode shaft assembly from the drive shaft.

Refit

1. Clean the drive shaft and tripode shaft assembly sheath.
2. Refit 2 new clamp sets onto the drive shaft.
3. Locate a new tripode joint onto the drive shaft.
4. Refit the new steel cable check ring onto the drive shaft.
5. Apply grease to the interior of the tripode shaft assembly.
6. Fix the tripode shaft assembly gaiter onto the drive shaft.
7. Fit the drive shaft assembly.

☞**Right Front Drive Shaft Assembly Refit**

Tripode Joint Assembly Sleeve

Remove

1. Remove the tripode shaft assembly.

☞**Tripode Shaft Assembly Remove**

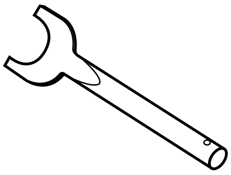
2. Remove the tripode shaft assembly gaiter from the drive shaft

Refit

1. Install the new tripode shaft assembly sheath on the drive shaft.
2. Refit the new tripode shaft assembly gaiter.

☞**Tripode Shaft Assembly Refit**

Special Tools

Tool Number	Description	Picture
T30001	Remover drive shaft	 T30001

Instrument Panel and Console

Specifications

Torque

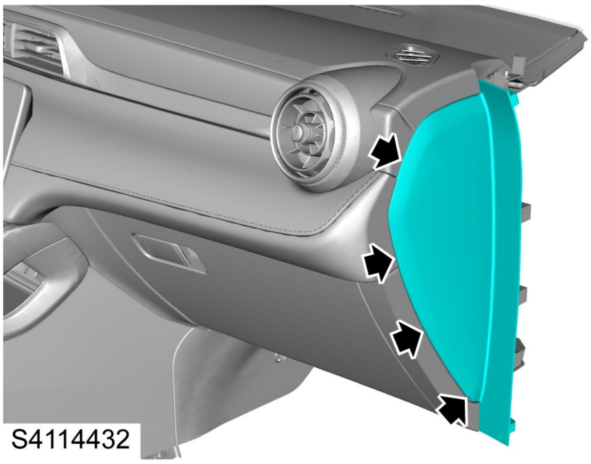
Description	Value
Bolt-Instrument panel to fascia bracket	5–6.6Nm
Bolt-Front passenger airbag to facia bracket	6-8Nm
Bolt-Fascia bracket to body	19-25Nm
Bolt-A/C module ASSY to I/P tie bar	4–6Nm
Bolt- Steering column to facia bean	19–25Nm

Service Procedures

Instrument Panel End Cover Plate

Remove

1. Pry off the body weather strip at the instrument panel end cover.
2. Pry off the clips of the instrument panel along the edge of the instrument panel end cover, and remove the instrument panel end cover.



3. Repeat the above steps to remove the instrument panel end cover on the other side.

Refit

1. Extend the edge of the instrument panel end cover into the body weather strips, align the clips of the end cover with the hole of the instrument panel frame, push it hard to the end and clamp it in place. Press the body weather strip tightly.
2. Repeat the above steps to fit the instrument panel end cover on the other side.

Instrument Panel Body

Remove

1. Disconnect the negative battery cable. Wait for 10 minutes until the **SRS** backup circuit is discharged.
2. Pry off the clip, and remove the instrument panel lower closure panel.
3. Remove the driver side lower trim panel assembly.

☞**Driver Side Lower Trim Panel Assembly Refit**

4. Remove the instrument panel side air outlet assembly.

☞**Central Instrument Panel Air Outlet Assembly Refit**

5. Remove the central instrument panel air outlet assembly.

☞**Central Instrument Panel Air Outlet Assembly Refit**

6. Remove the steering column shield.

☞**Steering Column Shield Remove**

7. Remove the instrument pack.

☞**Player Refit**

8. Remove the player.

☞**Player Refit**

9. Remove the A pillar upper trim panel.

☞**A Pillar Upper Trim Panel Remove**

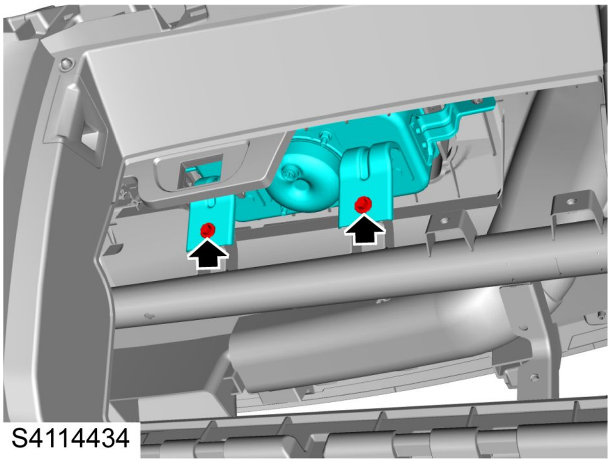
10. Remove the glove box assembly.

☞**Glove Box Assembly Remove**

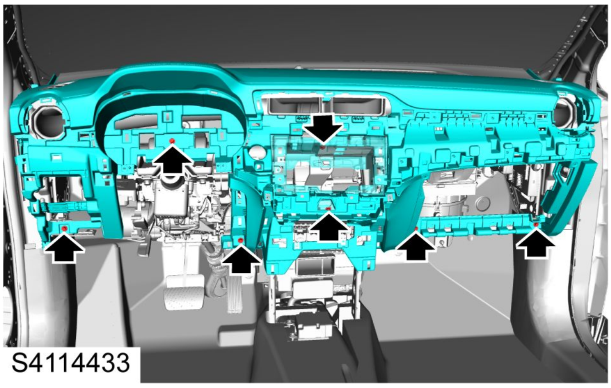
11. Remove the centre console assembly.

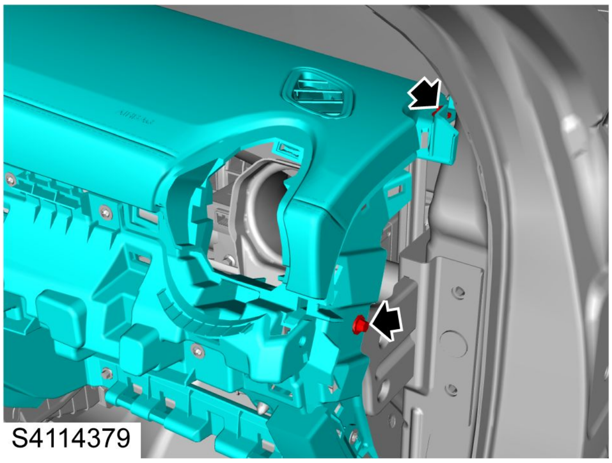
☞**Centre Console Assembly Remove**

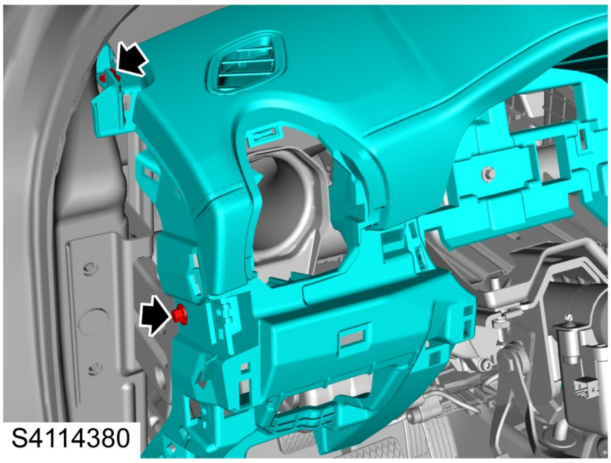
12. Remove 2 bolts fixing the instrument panel airbag bracket to the instrument panel beam.



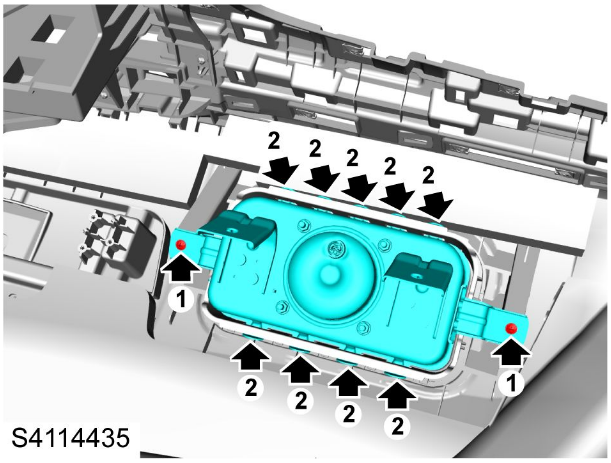
13. Remove 11 bolts fixing the instrument panel body assembly to the instrument panel beam.







14. Pry off the harness clip fixing the instrument panel body and disconnect the harness connector.
15. Adjust the steering wheel to the lowest position, and lift out the instrument panel body assembly with assistance.
16. If necessary, pry off the clip of the solar sensor from the back of instrument panel body, and push out the solar sensor.
17. If necessary, remove 6 screws fixing the instrument panel air duct to the instrument panel body from the back of instrument panel body, and remove the instrument panel air duct.
18. If necessary, remove 2 screws (1) and 9 claws (2) fixing the passenger airbag module to the instrument panel body, and remove the passenger airbag.



Refit

1. If the passenger airbag module has been removed, fit 2 screws fixing the passenger airbag module to the instrument panel body and tighten them to ensure the claws are fitted in place.
2. If the instrument air duct has been removed, fit 6 screws fixing the instrument panel air duct to the instrument panel body, and tighten them.
3. If the solar sensor has been removed, first fix the solar sensor to the instrument panel body, push in the solar sensor to ensure that it is clamped in place.
4. Lift the instrument panel body assembly in the vehicle, connect the harness connector, fit the harness clip, align the locating pin of the instrument panel body with the locating hole of the instrument panel beam, move it forward to the end, and check the gap at the joint, to ensure the connection is in place.
5. Fit 11 bolts fixing the instrument panel body to the instrument panel beam, tighten them to **5–6.6Nm**, and check the torque.
6. Fit 2 bolts fixing the instrument panel airbag bracket to the instrument panel beam, tighten them to **6-8Nm**, and check the torque.
7. Fit the centre console assembly.

☞**Centre Console Assembly Refit**

8. Fit the glove box assembly.

☞**Glove Box Assembly Refit**

9. Fit the A pillar upper trim panel.

☞**A Pillar Upper Trim Panel Refit**

10. Fit the player.

☞**Player Refit**

11. Fit the instrument pack.

☞**Instrument Pack Refit**

12. Fit the steering column shield.

☞**Steering Column Shield Refit**

13. Fit the central instrument panel air outlet assembly.

Central Instrument Panel Air Outlet Assembly Refit

14. Fit the instrument panel side air outlet assembly.

Instrument Panel Side Air Outlet Assembly Refit

15. Fit the driver side lower trim panel assembly.

Driver Side Lower Trim Panel Assembly Refit

16. Fit the instrument panel lower closure panel, and snap it into place.
17. Switch on the start switch, check if the **SRS** warning lamp illuminates for several seconds, and then goes out.

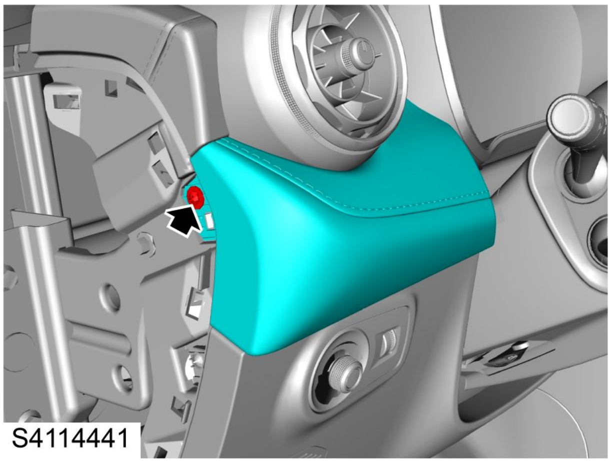
Driver Side Lower Trim Panel Assembly

Remove

1. Remove the left instrument panel end cover assembly.

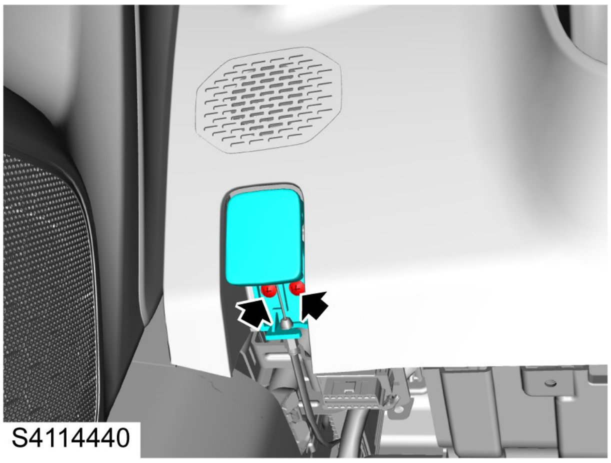
Instrument Panel End Cover Assembly Remove

2. Remove 1 screw fixing the driver side air outlet trim panel to the instrument panel body.



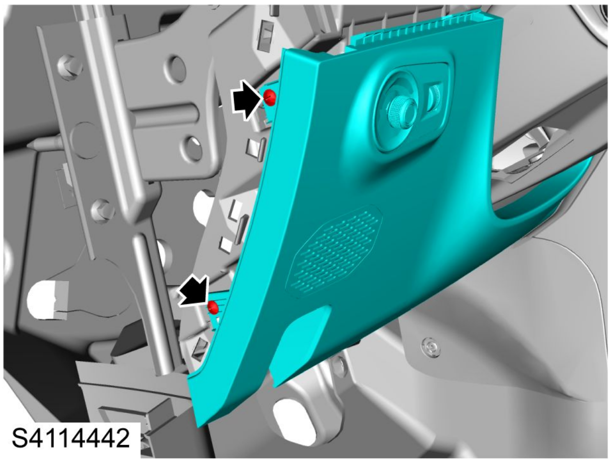
S4114441

3. Remove 2 screws fixing the bonnet release handle to the driver side lower trim panel.



S4114440

4. Remove 2 screws fixing the driver side lower trim panel to the instrument panel body.



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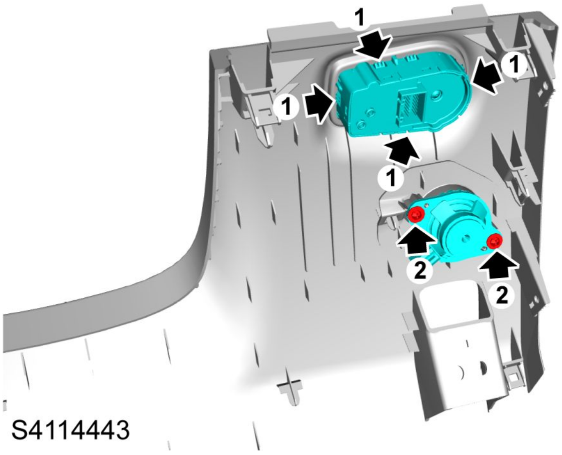
5. Pry off the retaining clip, disconnect the harness connector and remove the driver side lower trim panel assembly.

6. If necessary, pry off the clip of light height adjustment switch, and push out the light height adjustment switch (1).
7. If necessary, remove 2 screws (2) fixing the eCall speaker to the driver side lower trim panel from the back of the driver side lower trim panel, and remove the eCall speaker.



S4114443

Refit

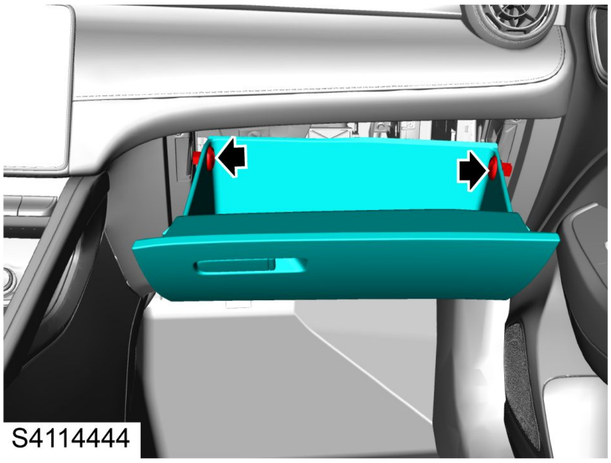
1. If the light height adjustment switch has been removed, first fix the light height adjustment switch to the driver side lower trim panel, and push in the light height adjustment switch to ensure it is clamped in place.
2. If the eCall speaker has been removed, fit 2 screws fixing the eCall speaker to the driver side lower trim panel, and tighten them.
3. Connect the harness connector, fix the driver side lower trim panel to the instrument panel, and snap it into place.
4. Fix the driver side lower trim panel to the instrument panel with 2 screws, and tighten them.
5. Fit 2 screws fixing the bonnet release handle to the driver side lower trim panel, and tighten them.
6. Fit and tighten 1 screw fixing the driver side air outlet trim panel to the instrument panel body.
7. Fit the left instrument panel end cover assembly.

☞**Instrument Panel End Cover Assembly Refit**

Glove Box Assembly

Remove

1. Open the glove box.
2. Remove 2 stoppers of the glove box to disengage the glove box from the glove box frame.



S4114444

3. Loosen the clip of glove box damper, and remove the glove box assembly.

Refit

1. Locate the glove box to the glove box frame, press the glove box stopper into the glove box frame, and tighten it.
2. Fit the glove box damper.
3. Close the glove box.

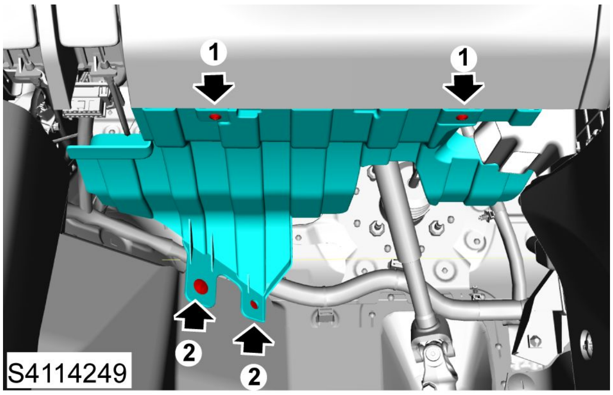
Instrument Panel Lower Closure Panel Assembly

Remove

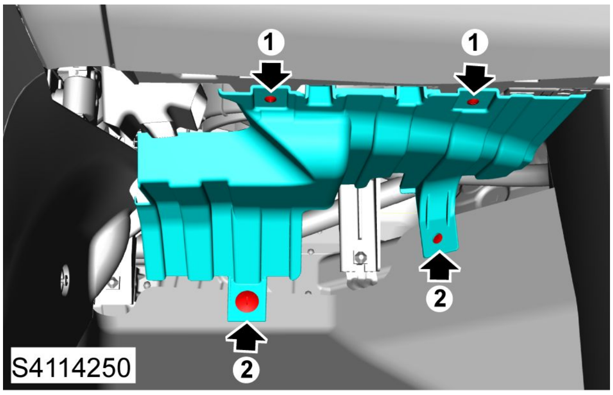
1. Remove the centre console heater closing plate assembly.

☞**Centre Console Heater Closing Plate Assembly Remove**

2. Remove 2 screws (1) fixing the driver side lower closure panel to the instrument panel.
3. Remove 2 screws (2) fixing the driver side lower closure panel to the body, and remove the driver side instrument panel lower closure panel.



4. Remove 2 screws (1) fixing the passenger side instrument panel lower closure panel to the instrument panel.
5. Remove 2 clips (2) fixing the passenger side instrument panel lower closure panel to the body, and remove the passenger side instrument panel lower closure panel.



Refit

1. Locate the passenger side instrument panel lower closure panel assembly to the instrument panel body assembly, fit 1 clip and 1 screw, ensure the clip is fitted in place and tighten the screw.
2. Locate the driver side instrument panel lower closure panel assembly to the instrument panel body assembly, fit 1 clip and 1 screw, ensure the clip is fitted in place and tighten the screw.
3. Fit and tighten 2 screws fixing the driver side instrument panel lower closure panel assembly to the body.

Instrument Panel Side Air Outlet Assembly

Remove

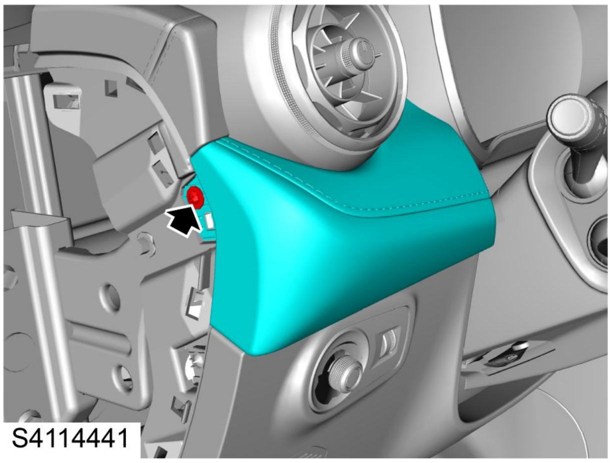
1. Remove the instrument panel end cover.

☞**Instrument Panel End Cover Assembly Remove**

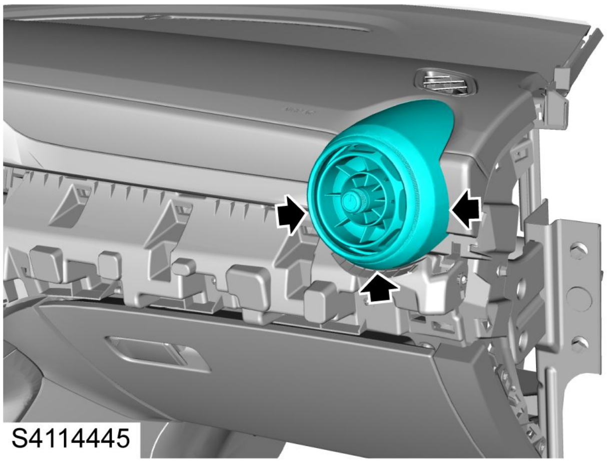
2. Remove the central control panel and the switch of the instrument panel.

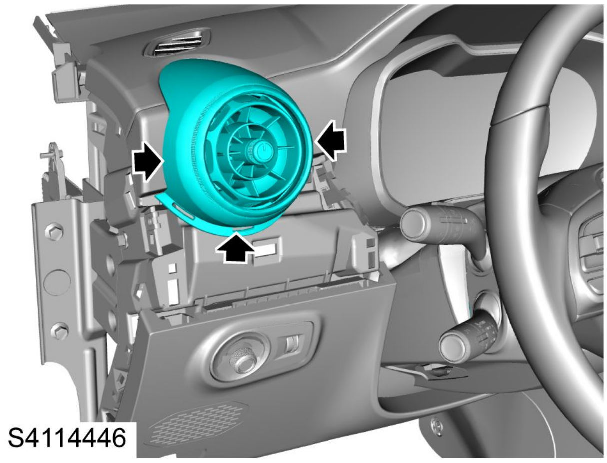
☞**Instrument Panel Central Control Panel and Switch Refit**

3. Remove 1 screw fixing the driver side air outlet trim panel to the instrument panel body.



4. Pry off the clip along the edge of the instrument panel side air outlet, and remove the instrument panel side air outlet.





Refit

1. Align the clip of the instrument panel side air outlet to the hole of the instrument panel body, push it hard to the end, and clamp it in place.
2. Fit and tighten 1 screw fixing the driver side air outlet trim panel to the instrument panel body.
3. Fit the central control panel and switch of the instrument panel.

☞**Instrument Panel Central Control Panel and Switch Refit**

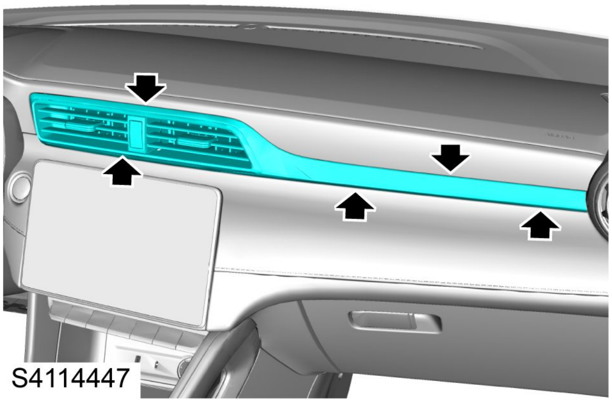
4. Fit the instrument panel end cover.

☞**Instrument Panel End Cover Assembly Refit**

Central Instrument Panel Air Outlet Assembly

Remove

1. Disconnect the negative battery cable.
2. Pry off the clip fixing the central air outlet to the instrument panel body from the edge of the central instrument panel air outlet, and remove the central instrument panel air outlet assembly.



3. Disconnect the harness connector and remove the central instrument panel air outlet assembly.
4. If necessary, pry off the clip of the hazard warning lamp switch from the back of the central air outlet of the central instrument panel air outlet assembly and push out the hazard warning lamp switch.

Refit

1. If the hazard warning lamp switch has been removed, first fix the hazard warning lamp switch to the central air outlet, push in the hazard warning lamp switch and ensure it is clamped in place.
2. Connect the harness connector of the hazard warning lamp switch, align the clip of the central air outlet assembly with the hole of the instrument panel body, push it hard to the end and clamp it in place.
3. Connect the negative battery cable.

Central Control Panel and Switch of Instrument Panel

Remove

1. Remove the right instrument panel end cover.

☞**Instrument Panel End Cover Assembly Remove**

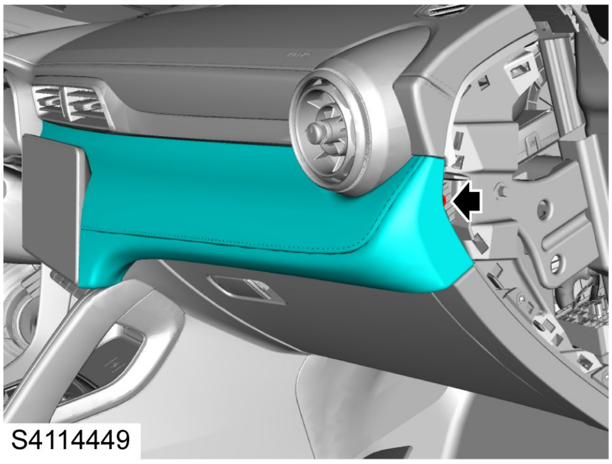
2. Remove the entertainment panel switch.

☞**Entertainment Panel Switch Remove**

3. Remove front infotainment control module (FICM).

☞**Front Infotainment Control Module (FICM) Remove**

4. Remove 5 screws fixing the instrument panel central control panel to the instrument panel body.



5. Pry off the clip along the edge of the instrument panel central control panel, disconnect the harness connector, and remove the instrument panel central control panel.
6. If necessary, pry off the clip of the one-touch start switch from the back of the instrument panel central control panel and push out the one-touch start switch.

Refit

1. If the one-touch start switch has been removed, first fix the one-touch start switch to the instrument panel central control panel, and push in the one-touch start switch to ensure it is clamped in place.
2. Connect the harness connector, locate the instrument panel central control panel to the instrument panel, and snap it into place.
3. Fit 1 screw fixing the instrument panel central control panel to the instrument panel body, and tighten it.
4. Fit the right instrument panel end cover.

☞**Instrument Panel End Cover Assembly Remove**

Instrument Panel IPK Frame

Remove

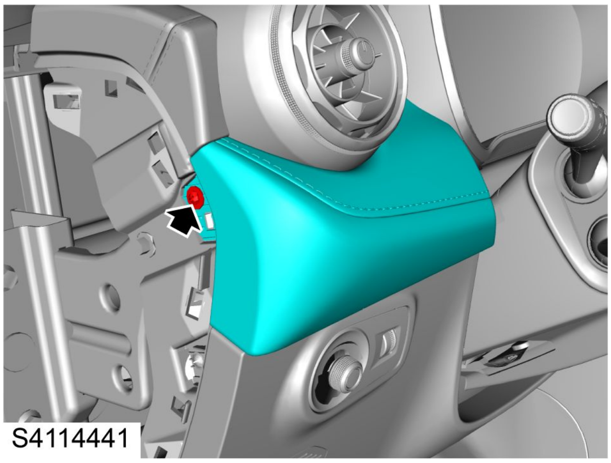
1. Disconnect the negative battery cable.
2. Remove the central control panel and the switch of the instrument panel.

☞**Central Instrument Panel Air Outlet Assembly Refit**

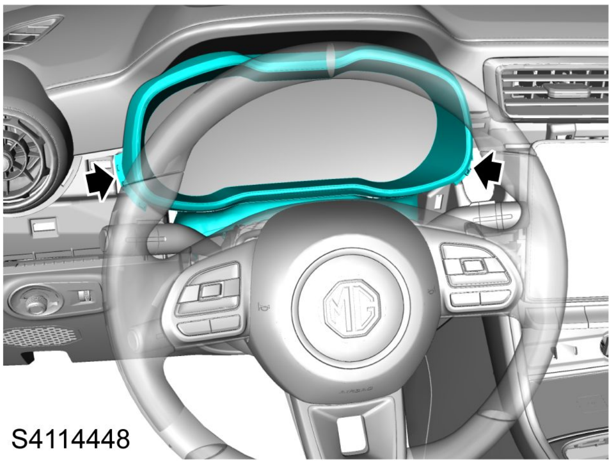
3. Remove the steering column upper shield.

☞**Central Instrument Panel Air Outlet Assembly Refit**

4. Remove 1 screw fixing the driver side air outlet trim panel to the instrument panel body.



5. Pry off the clip fixing the IPK frame to the instrument panel body, and remove the IPK frame.



Refit

1. Align the clip of the instrument panel IPK frame to the hole of the instrument panel body, push it hard to the end, and clamp it in place.
2. Fit and tighten 1 screw fixing the instrument panel IPK frame to the instrument panel.
3. Fit the steering column upper shield.

☞**Steering Column Shield Refit**

4. Fit the central control panel and switch of the instrument panel.

☞**Central Instrument Panel Air Outlet Assembly Refit**

5. Connect the negative battery cable.

Instrument Panel Beam Assembly

Remove

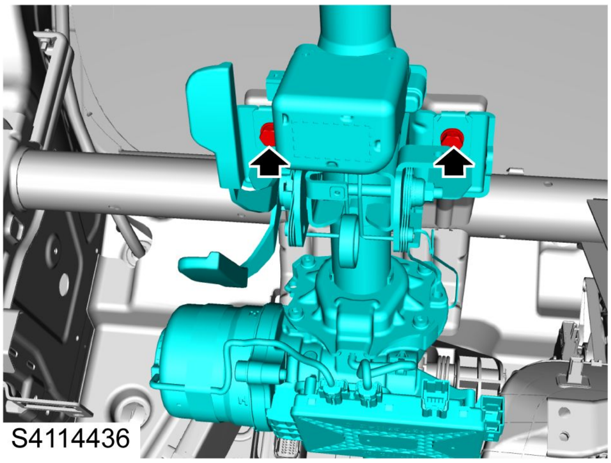
1. Remove the instrument panel body assembly.

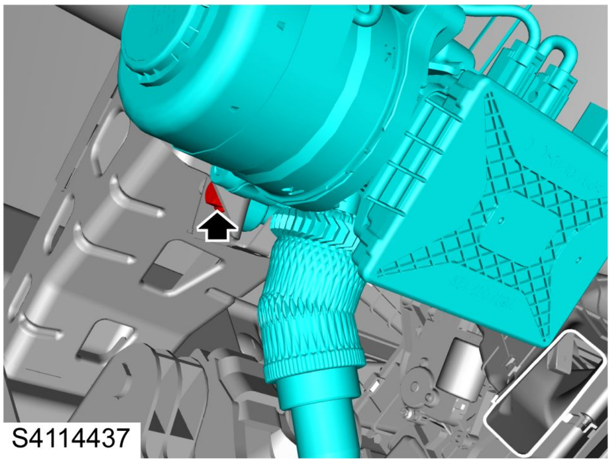
☞**Instrument Panel Beam Assembly Remove**

2. Remove the A/C air inlet grille.

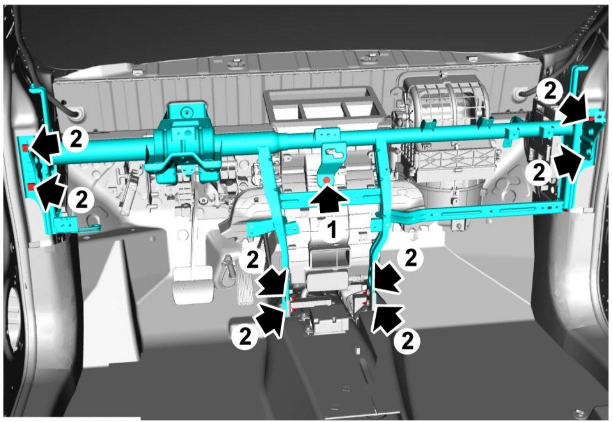
☞**A/C Air Inlet Grille Assembly Remove**

3. Remove 3 bolts fixing the steering column assembly to the instrument panel beam, remove the steering column assembly and support it reliably.





4. Disconnect the harness connector, loosen the harness clip, and remove 1 bolt (1) fixing the A/C box assembly to the instrument panel beam.
5. Remove 9 bolts (2) fixing the instrument panel beam assembly to the body, and remove the instrument panel beam assembly with assistance.



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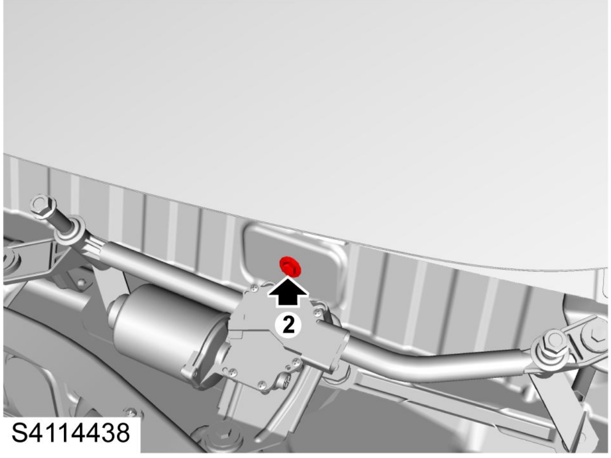


S4114438

6. If necessary, remove 2 bolts fixing the interconnected T-BOX to the instrument panel beam, and remove the interconnected T-Box.
7. If necessary, remove 2 bolts fixing the eCall T-BOX to the instrument panel beam, and remove the eCall T-Box.
8. If necessary, remove 2 bolts fixing the A/C control module to the instrument panel beam, and remove the A/C control module.

Refit

1. If the A/C control module has been removed, fit and tighten 2 bolts fixing the A/C control module to the instrument panel beam.
2. If the eCall T-BOX has been removed, fit 2 bolts fixing the eCall T-BOX to the instrument panel beam and tighten them.
3. If the interconnected T-BOX has been removed, fit and tighten 2 bolts fixing the interconnected T-BOX to the instrument panel beam.
4. With assistance, locate the instrument panel beam to the correct position of the body.
5. Fit 9 bolts fixing the instrument panel beam assembly to the body, tighten them to **19-25Nm**, and check the torque.
6. Fit 1 bolt fixing the A/C box assembly to the instrument panel beam assembly, tighten them to **4–6Nm**, and check the torque.
7. Connect the harness connector, and fit the harness clip.
8. Fit 3 bolts fixing the steering column to the instrument panel beam assembly, tighten them to **19–25Nm**, and check the torque.
9. Fit the A/C air inlet grille.

A/C Air Inlet Grille Assembly Refit

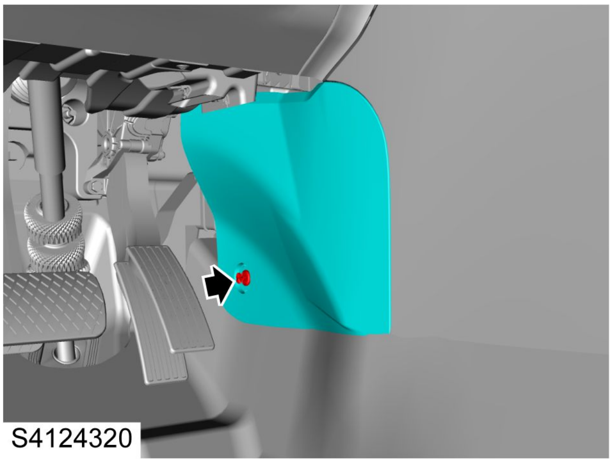
10. Fit the instrument panel body assembly.

Instrument Panel Beam Assembly Refit

Centre Console Heater Closing Plate Assembly

Remove

1. Remove 1 split pin fixing the centre console heater closing plate assembly to the A/C box.



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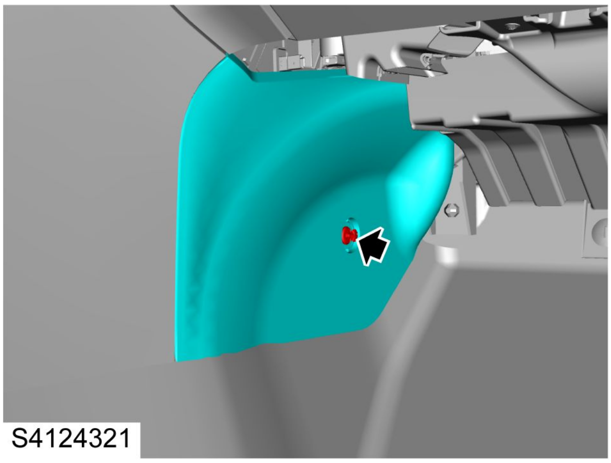


S4124321

2. Pry off the clip along the edge of the centre console heater closing plate and remove the centre console heater closing plate assembly.

Refit

1. Align the clip of the centre console heater closing plate to the hole of the centre console body, push it hard to the end, and clamp it in place.
2. Locate the centre console heater closing plate to the correct position, and press the locating pins in place.

Centre Console Assembly

Remove

1. Disconnect the negative battery cable.
2. Remove the centre console heater closing plate assembly.

☞**Centre Console Heater Closing Plate Assembly Remove**

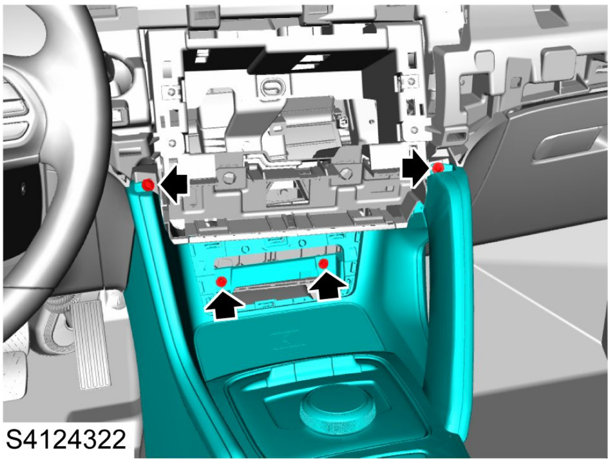
3. Remove the instrument panel central control panel.

☞**Instrument Panel Central Control Panel and Switch Refit**

4. Remove the electronic shifter.

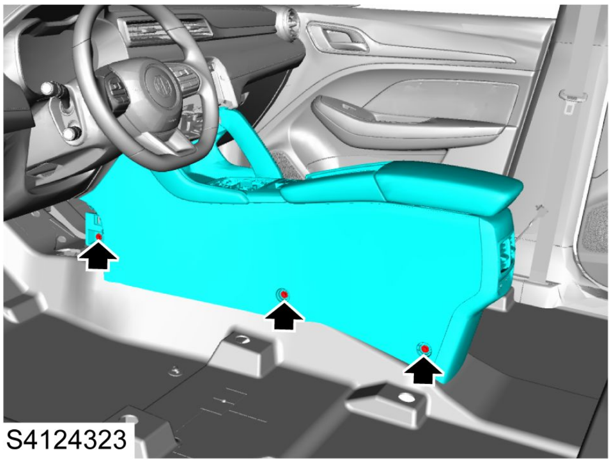
☞**Instrument Panel Central Control Panel and Switch Refit**

5. Remove 4 screws fixing the centre console assembly to the instrument panel body.



S4124322

6. Move the front seat to a proper position, pry off the bolt cover, and remove 6 bolts fixing the centre console to both sides of the bracket.



S4124323

7. Disconnect the harness connector, loosen the clip and lift the centre console assembly out of the vehicle with assistance.

Refit

1. With assistance, lift the centre console body assembly in the vehicle, align the locating pin of the centre console body with the locating hole of the instrument

panel body, move it forward to the end, and check the gap at the joint between the front part of the centre console body and the lower part of the instrument panel, to ensure the connection is in place.

2. Connect the harness connector, and press the harness clip.
3. Fit 4 screws fixing the centre console assembly to the instrument panel body, and press them in place.
4. Fit 6 bolts fixing the centre console to both sides of the bracket, and tighten them.
5. Fit the electronic shifter.

☞**Instrument Panel Central Control Panel and Switch Refit**

6. Fit the instrument panel central control panel.

☞**Instrument Panel Central Control Panel and Switch Refit**

7. Fit the centre console heater closing plate assembly.

☞**Centre Console Heater Closing Plate Assembly Refit**

8. Connect the negative battery cable.

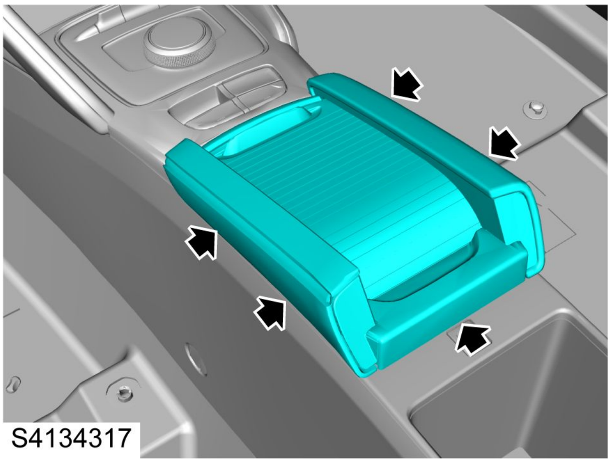
Centre Console Cup Holder

Remove

1. Remove the centre console assembly.

☞**Centre Console Rear Panel Assembly Remove**

2. Disconnect the backup antenna harness connect from the bottom of the centre console, and remove 2 screws fixing the backup antenna to the centre console cup holder.
3. Disconnect the clip fixing the harness connector from the bottom of the centre console.
4. Open the centre console armrest, pry off the clip fixing the centre console cup holder to the centre console, and remove the centre console armrest assembly.



Refit

1. Align the clip of the centre console upper trim panel with the hole of the centre console body, push it hard to the end, and clamp it in place.
2. Fit the centre console bottom harness clip.
3. Fit and tighten 2 screws fixing the backup antenna to the centre console cup holder, and connect the harness connector.
4. Fit the centre console assembly.

☞**Centre Console Rear Panel Assembly Remove**

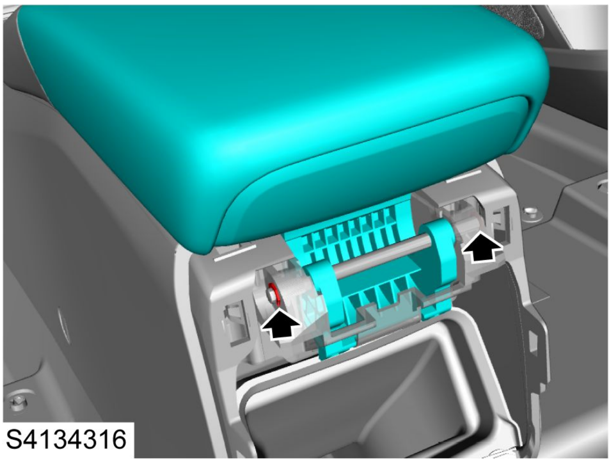
Centre Console Armrest Assembly

Remove

1. Remove the centre console rear panel assembly.

☞**Centre Console Rear Panel Assembly Remove**

2. Pry off the retaining circlip and remove the shaft connecting the centre console armrest and the centre console.



3. Remove the centre console armrest assembly.

Refit

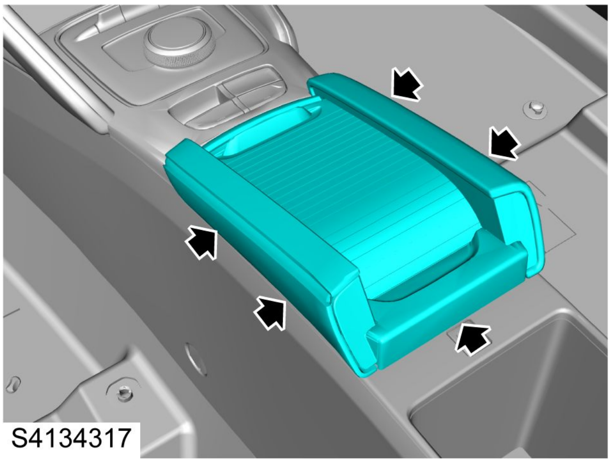
1. Locate the centre console armrest on the centre console.
2. Fit the shaft connecting the centre console armrest and the centre console and fit the retaining circlip in place.
3. Fit the centre console rear panel assembly.

☞**Centre Console Rear Panel Assembly Refit**

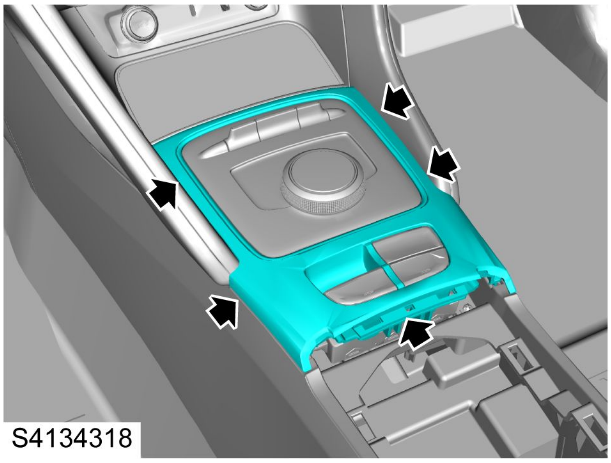
Centre Console Upper Trim Panel Assembly

Remove

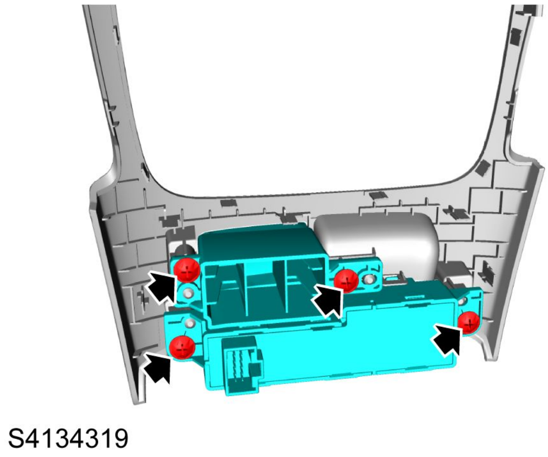
1. Disconnect the negative battery cable, and open the centre console armrest.
2. Pry off the clip along the edge of the centre console cup holder, and lift up the centre console cup holder assembly without removing it.



3. Pry off the clip along the edge of the centre console upper trim panel, disconnect the harness connector, and remove the centre console upper trim panel.



4. If necessary, remove 4 screws fixing the centre console switch to the centre console upper trim panel from the back of the centre console upper trim panel, and remove the centre console switch.



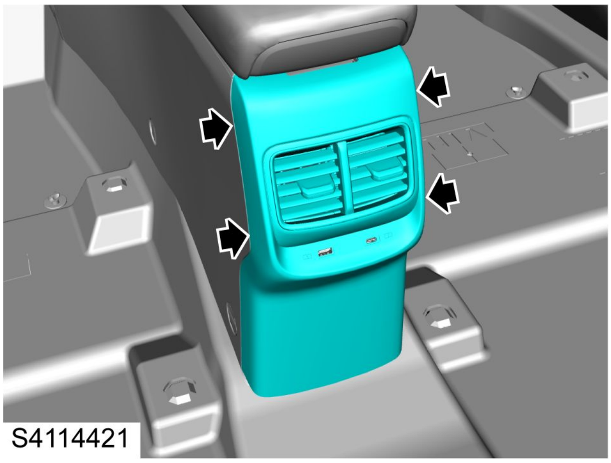
Refit

1. If the centre console switch has been removed, fit and tighten 4 screws fixing the centre console switch to the centre console upper trim panel.
2. Connect the harness connector, align the clip of centre console upper trim panel with the hole of the centre console body, push it hard to the end, and clamp it in place.
3. Align the clip of the centre console cup holder with the hole of the centre console body, push it hard to the end and clamp it in place.
4. Put down the armrest, and connect the negative battery cable.

Centre Console Rear Panel Assembly

Remove

1. Pry off the clip along the edge of the centre console rear panel assembly, disconnect the harness connector, and remove the centre console rear panel assembly.



2. If necessary, remove 2 screws fixing the rear USB charging module to the centre console rear panel assembly from the back of the centre console rear panel, and remove the rear USB charging module.
3. If necessary, remove 2 screws fixing the TPMS to the centre console rear panel assembly from the back of the centre console rear panel, and remove the TPMS.

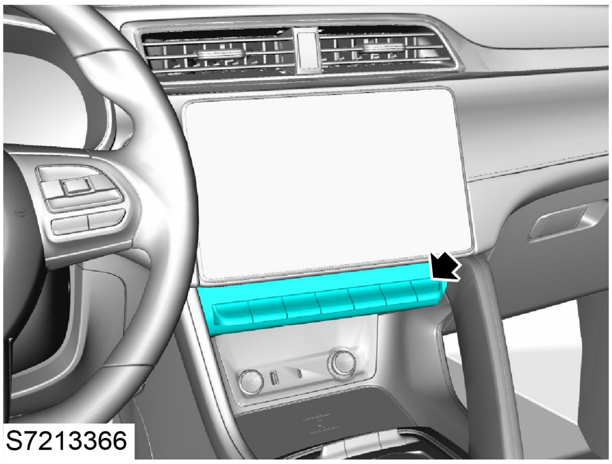
Refit

1. If the TPMS has been removed, fit 2 screws fixing the TPMS to the centre console rear panel, and tighten them.
2. If the rear USB charging module has been removed, fit 2 screws fixing the rear USB charging module to the centre console rear panel, and tighten them.
3. Connect the harness connector, locate the centre console rear panel assembly onto the centre console, and snap it into place.

Entertainment Panel Switch

Remove

1. Disconnect the negative battery cable.
2. Pry off the clip, loosen the harness connector and remove the entertainment panel switch.



Refit

1. Connect the harness connector.
2. Fix the entertainment panel switch to the instrument panel body, and snap it into place.
3. Connect the negative battery cable.

Interior Trim and Paneling

Specifications

Torque

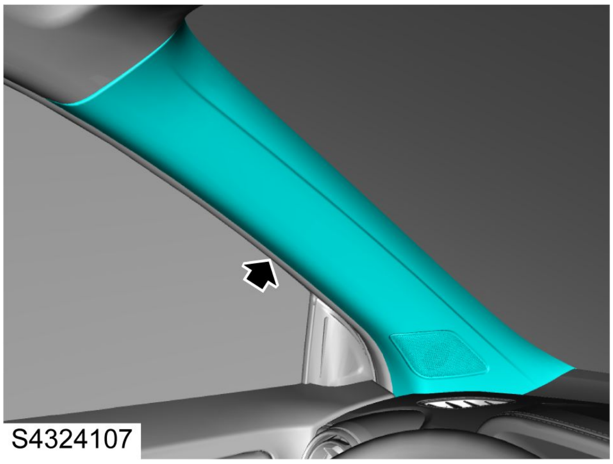
Description	Value
Bolt-Front seat belt retractor	35-45Nm
Screw-Compatment still trim to Body	2–2.7 Nm
Bolt-Grab handle to Handle bracket	5–7 Nm

Service Procedures

A Pillar Upper Trim Panel

Remove

1. Pull open the front door body side weatherstrips located outside the A pillar upper trim panel.
2. Carefully pry off the clip of A pillar upper trim panel assembly.



3. Disconnect the harness connector of the tweeter.
4. Remove the A pillar upper trim panel assembly.

Refit

1. Connect the connector of the tweeter.
2. Locate the A pillar upper trim panel to the body, and snap it into place.
3. Press the front door body side weatherstrips located outside the A pillar upper trim panel tightly.

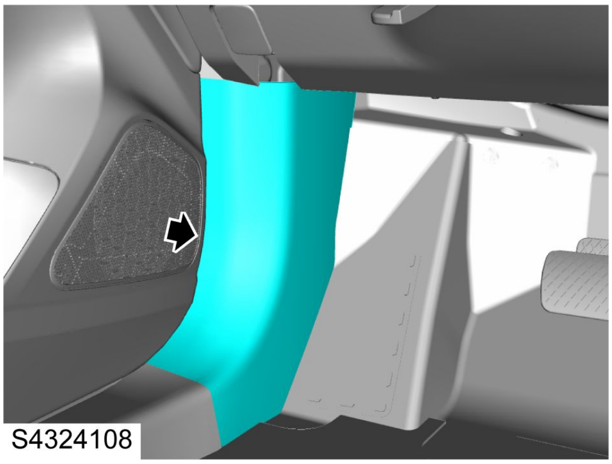
A Pillar Lower Trim Panel

Remove

1. Remove the instrument panel end cover assembly.

☞**Instrument Panel End Cover Assembly Remove**

2. Pull open the front door body side weatherstrips located outside the A pillar lower trim panel assembly.
3. Pry off the front end clip of the door sill trim panel and release the door sill trim panel from the lower end of the A pillar lower trim panel assembly.
4. Pry off the clip of the A pillar lower trim panel assembly and remove the A pillar lower trim panel assembly.



Refit

1. Fit the A pillar lower trim panel assembly, and ensure that the clip is fitted in place.
2. Insert the front end clip of the door sill trim panel into the hole of the A pillar lower trim panel and ensure that it is fitted in place.
3. Fit the instrument panel end cover assembly.

☞**Instrument Panel End Cover Assembly Refit**

4. Fit the front door weatherstrips.

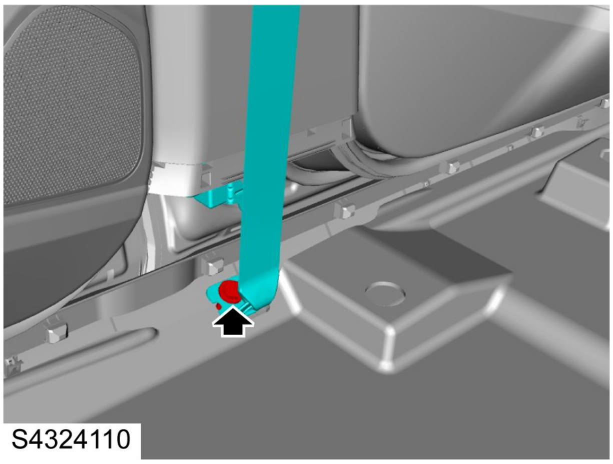
B/C Pillar Upper Trim Panel

Remove

1. Pull open the door weatherstrips on both sides of the B/C pillar upper trim panel assembly.
2. Remove the door sill trim panel assembly.

☞**Door Sill Trim Panel Assembly Remove**

3. Remove 1 bolt from the lower fixing point of the front seat belt.



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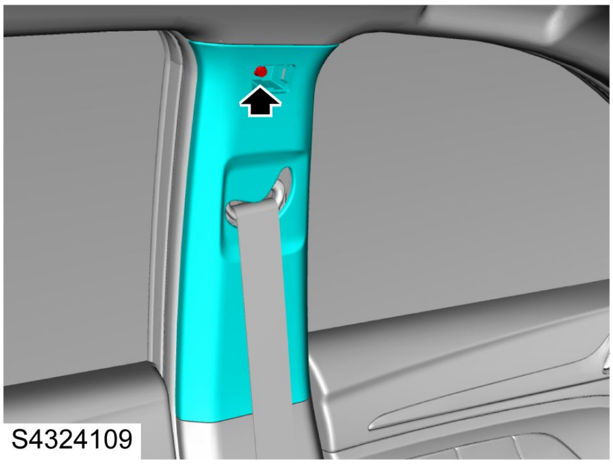
4. Pry off the upper clip of the B/C pillar lower trim panel, and separate the B/C pillar upper trim panel from the upper part of the B/C pillar lower trim panel assembly.
5. Pry off the bolt cover of the B/C pillar upper trim panel, and remove 1 bolt fixing the B/C pillar upper trim panel to the body.



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6. Pry off the fixing clip, remove the B/C pillar upper trim panel and pull out the seat belt.

Refit

1. Pass the seat belt out of the hole of the B/C pillar upper trim panel assembly.
2. Locate the B/C pillar upper trim panel assembly on the B/C pillar, and snap it into place.
3. Fit and tighten 1 bolt fixing the B/C pillar upper trim panel to the body, and fit the bolt cover.
4. Locate the B/C pillar lower trim panel to the lower end of the B/C pillar upper trim panel, and snap it into place.
5. Fix the seat belt to the body, fit 1 bolt, tighten it to **35-45Nm**, and check the torque.
6. Fit the door sill trim panel assembly.

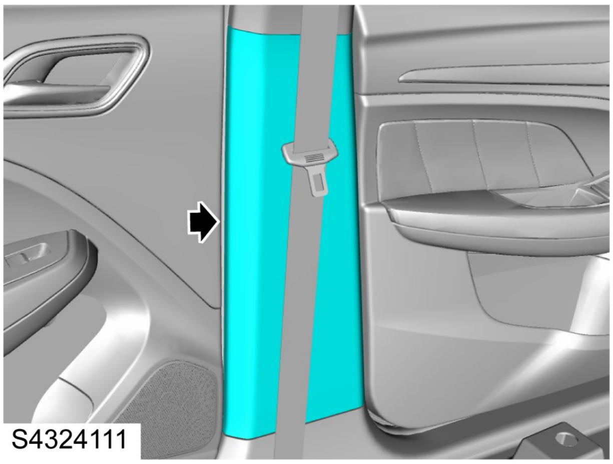
☞**Door Sill Trim Panel Assembly Refit**

7. Fit the door weatherstrips on both sides of the B/C pillar upper trim panel assembly.

B/C Pillar Lower Trim Panel

Remove

1. Pull away the door weatherstrips on both sides of the B/C pillar lower trim panel assembly.
2. Pry off the clip at the connection between the door sill trim panel and the lower end of the B/C pillar.
3. Pry off the retaining clip of the B/C pillar lower trim panel, and remove the B/C pillar lower trim panel assembly.



Refit

1. Locate the B/C pillar lower trim panel assembly on the B/C pillar, and fit the clip in place.
2. Fit the retaining clip at the joint between the door sill trim panel and the lower end of B/C pillar in place.
3. Fit the door weatherstrips on both sides of the B/C pillar lower trim panel assembly.

D Pillar Upper Trim Panel

Remove

1. Remove the rear parcel shelf assembly.

Door Sill Trim Panel Assembly Remove

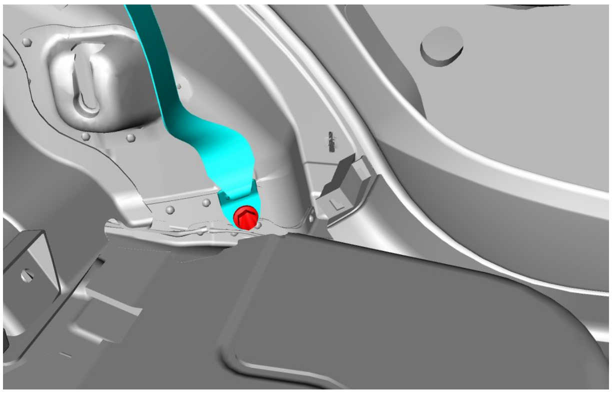
2. Remove the D pillar lower trim panel.

Door Sill Trim Panel Assembly Remove

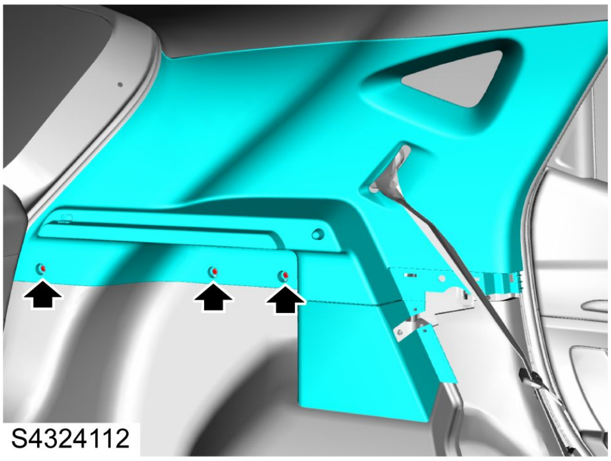
3. Remove the rear seat cushion assembly.

Door Sill Trim Panel Assembly Remove

4. Remove 1 bolts fixing the rear seat belt to the body.



5. Pry off the screw cover, and remove 3 screws fixing the D pillar upper trim panel to the body.



6. Pry off the clip, remove the D pillar upper trim panel, and pull the seat belt out of the hole in the D pillar upper trim panel.

Refit

1. Pass the seat belt out of the hole of the D pillar upper trim panel, locate the D pillar upper trim panel to the body, and snap it into place.
2. Fit and tighten 3 screws fixing the D pillar upper trim panel to the body, and press them into the screw cover.
3. Fit 1 bolt fixing the seat belt to the body, tighten it to **35-45Nm**, and check the torque.
4. Fit the rear seat cushion assembly.

Door Sill Trim Panel Assembly Remove

5. Fit the D pillar lower trim panel.

Door Sill Trim Panel Assembly Remove

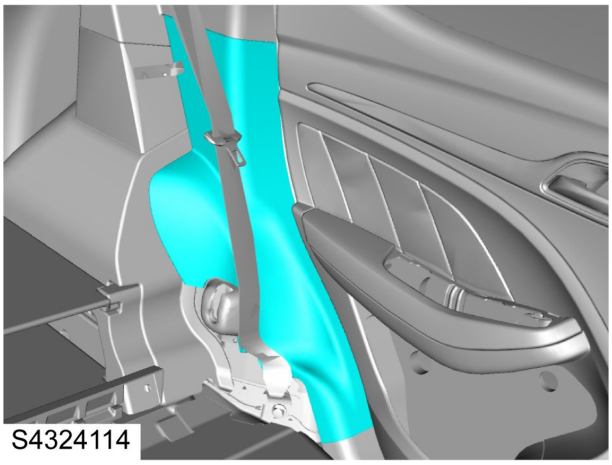
6. Fit the rear parcel shelf assembly.

☞**Door Sill Trim Panel Assembly Remove**

D Pillar Lower Trim Panel

Remove

1. Pull open the rear door body side weatherstrips.
2. Carefully pry off the retaining clips on the D pillar lower trim panel and remove the D pillar lower trim panel.



Refit

1. Fit the D pillar lower trim panel to the body, and ensure that the clip is fitted in place.
2. Fit the rear door body side weatherstrip in place.

Roof Trim Panel Assembly - without Sunroof

Remove

1. Disconnect the negative battery cable and put down the seat back.
2. Remove the A pillar upper trim panel assembly.

☞**A Pillar Upper Trim Panel Remove**

3. Remove the sun visor assembly.

☞**Sun Visor Assembly Remove**

4. Remove the front reading lamp.

☞**Front Reading Lamp Remove**

5. Remove the inner roof handle.

☞**Inner Roof Handle Remove**

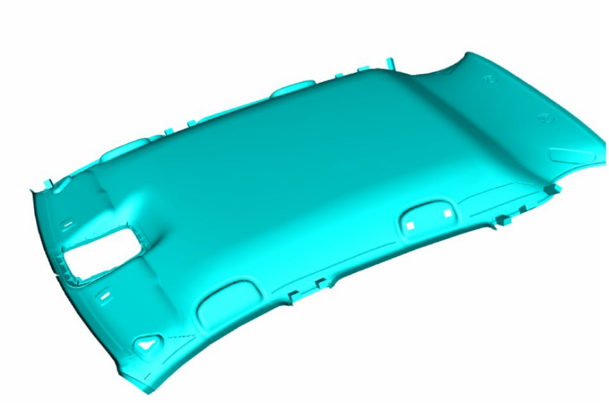
6. Remove the B/C pillar upper trim panel assembly.

☞**B/C Pillar Upper Trim Panel Remove**

7. Remove the D pillar upper trim panel assembly.

☞**D Pillar Upper Trim Panel Assembly Remove**

8. Loosen the retaining clips and carefully take out the roof interior trim panel from the rear door of the passenger side.



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Refit

1. Locate the roof interior trim panel on the body, and snap it into place.
2. Fit the D pillar upper trim panel assembly.

☞**D Pillar Upper Trim Panel Assembly Refit**

3. Fit the B/C pillar upper trim panel assembly.

☞**B/C Pillar Upper Trim Panel Refit**

4. Fit the inner roof handle.

☞**Inner Roof Handle Refit**

5. Fit the front reading lamp.

☞**Front Reading Lamp Refit**

6. Fit the sun visor assembly.

☞**Sun Visor Assembly Refit**

7. Fit the A pillar upper trim panel assembly.

☞**A Pillar Upper Trim Panel Refit**

8. Restore the seat adjustment and connect the negative battery cable.

Roof Trim Panel Assembly - with Sunroof

Remove

1. Disconnect the negative battery cable and put down the seat back.
2. Remove the A pillar upper trim panel assembly.

☞A Pillar Upper Trim Panel Remove

3. Remove the sun visor assembly.

☞Sun Visor Assembly Remove

4. Remove the front reading lamp.

☞Front Reading Lamp Remove

5. Remove the inner roof handle.

☞Inner Roof Handle Remove

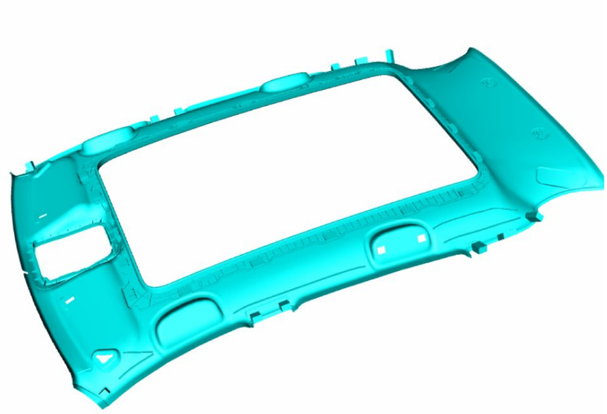
6. Remove the B/C pillar upper trim panel assembly.

☞B/C Pillar Upper Trim Panel Remove

7. Remove the D pillar upper trim panel assembly.

☞D Pillar Upper Trim Panel Assembly Remove

8. Loosen the retaining clips and carefully take out the roof interior trim panel from the rear door of the passenger side.



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Refit

1. Locate the roof interior trim panel on the body, and snap it into place.
2. Fit the D pillar upper trim panel assembly.

☞D Pillar Upper Trim Panel Assembly Refit

3. Fit the B/C pillar upper trim panel assembly.

☞B/C Pillar Upper Trim Panel Refit

4. Fit the inner roof handle.

☞Inner Roof Handle Refit

5. Fit the front reading lamp.

☞Front Reading Lamp Refit

6. Fit the sun visor assembly.

☞Sun Visor Assembly Refit

7. Fit the A pillar upper trim panel assembly.

☞A Pillar Upper Trim Panel Refit

8. Restore the seat adjustment and connect the negative battery cable.

Carpet

Remove

1. Disconnect the negative battery cable.
2. Remove the front seat assembly.

☞**Front Seat Assembly Remove**

3. Remove the rear seat cushion assembly.

☞**Front Seat Assembly Remove**

4. Remove the centre console assembly.

☞**Centre Console Assembly Remove**

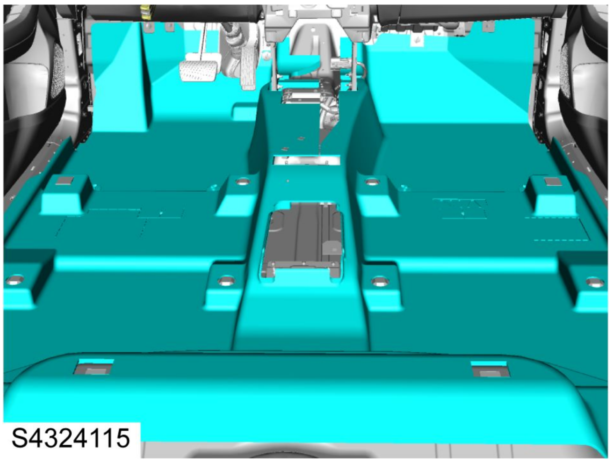
5. Remove the A pillar lower trim panel.

☞**A Pillar Lower Trim Panel Remove**

6. Remove the door sill trim panel.

☞**Door Sill Trim Panel Assembly Remove**

7. Loosen the clip fixing the carpet, disconnect the harness connector and remove the carpet.



S4324115

Refit

1. Place the carpet in the vehicle, connect the harness connector, and secure it with clips.
2. Fit the door sill trim panel.

☞**Door Sill Trim Panel Assembly Refit**

3. Fit the A pillar lower trim panel.

☞**A Pillar Lower Trim Panel Refit**

4. Fit the centre console assembly.

☞**Centre Console Assembly Refit**

5. Fit the rear seat cushion assembly.

☞**Rear Seat Cushion Assembly Refit**

6. Fit the front seat assembly.

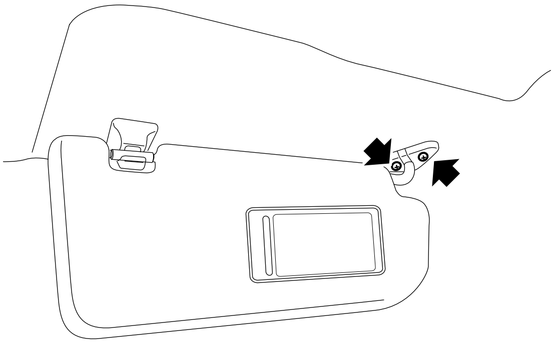
☞**Rear Seat Cushion Assembly Refit**

7. Connect the negative battery cable.

Sun Visor Assembly

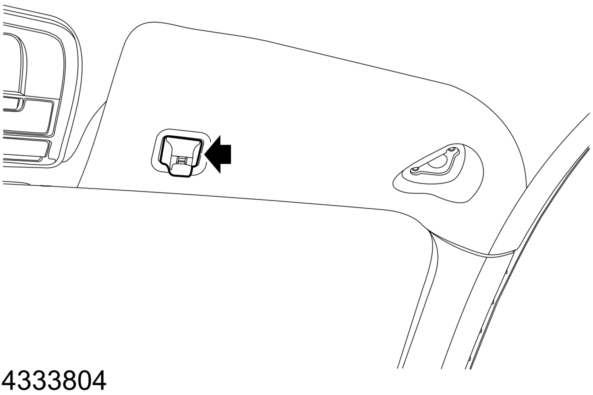
Remove

1. Turn down the sun visor.
2. Pry up the sun visor screw cover, remove 2 screws fixing the sun visor to the roof interior trim panel, and remove the sun visor from the sun visor bracket.



S4333001

3. Open the sun visor bracket screw cover, remove 1 screw fixing the sun visor bracket to the roof interior trim panel, and remove the sun visor bracket.



S4333804

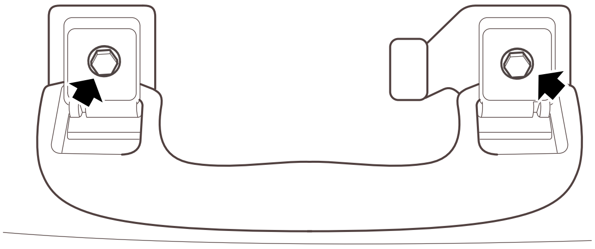
Refit

1. Fix the sun visor bracket to the roof interior trim panel, fit 1 screw, tighten it to **2–2.7 Nm** and check the torque.
2. Fix one end of the sun visor to the sun visor bracket and the other end to the roof interior trim panel, fit 2 screws, tighten them to **2–2.7 Nm**, and check the torque. Fit the sun visor screw cover.
3. Reset the sun visor.

Interior Roof Handle

Remove

1. Pry off 2 bolt covers of the interior roof handle.
2. Remove 2 bolts fixing the interior roof handle to the body.



S4340005

3. Remove the interior roof handle.

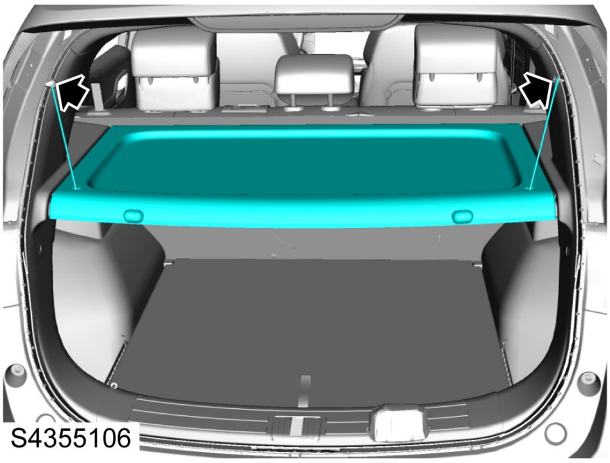
Refit

1. Locate the interior roof handle to the correct position.
2. Fit 2 retaining bolts, tighten them to **5–7 Nm** and check the torque.
3. Fit 2 bolt covers.

Rear Parcel Shelf Assembly

Remove

1. Open the tail gate.
2. Remove 2 slings of rear parcel shelf on the tail gate.



S4355106

3. Lift the rear parcel shelf to disengage from the retaining slot, pull out and remove the rear parcel shelf.

Refit

1. Insert the tail end of the rear parcel shelf into the slot of the D pillar upper trim panel, and push it into place.
2. Hang 2 slings on the tail gate.
3. Close the tail gate.

Truck Side Trim Panel Assembly

Remove

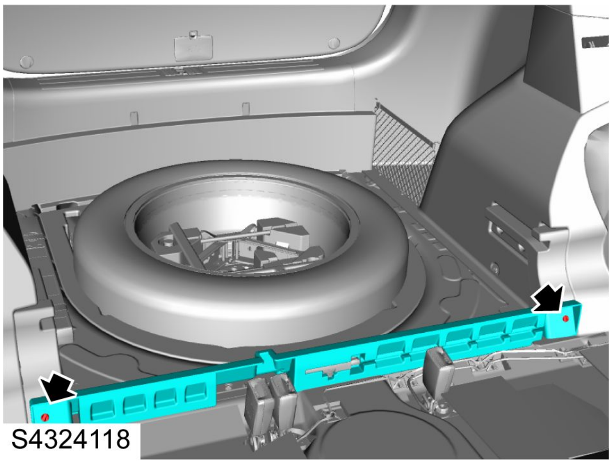
1. Remove the D pillar upper trim panel.

☞**Door Sill Trim Panel Assembly Remove**

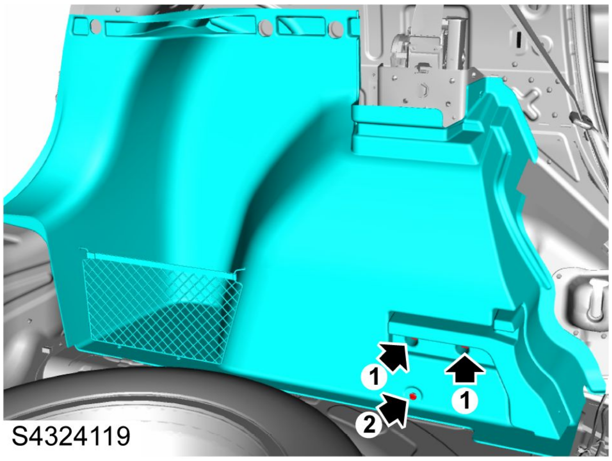
2. Remove the trunk sill trim panel.

☞**Door Sill Trim Panel Assembly Remove**

3. Pry off 2 clips fixing the trunk front trim panel to the trunk side trim panel, and remove the trunk front trim panel.


S4324118

4. Remove 2 bolts (1) and 1 clip (2) fixing the trunk side trim panel to the body, and remove the trunk side trim panel.



S4324119

Refit

1. Locate the trunk side trim panel to the body, fit and tighten 2 bolts, and snap it into place.
2. Locate the trunk front trim panel to the body, and snap it into place.
3. Fit the trunk sill trim panel.

☞**Door Sill Trim Panel Assembly Remove**

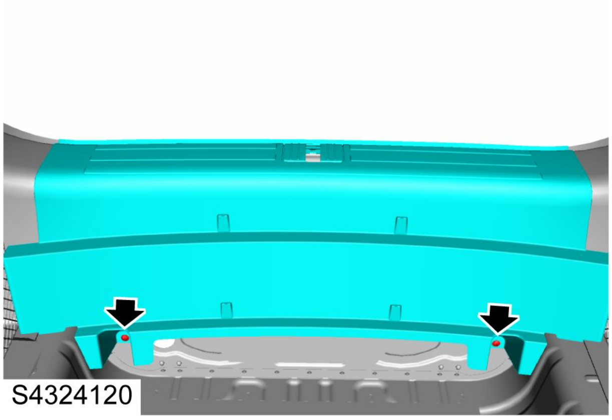
4. Fit the D pillar upper trim panel.

☞**Door Sill Trim Panel Assembly Remove**

Trunk Sill Trim Panel

Remove

1. Open the tail gate.
2. Remove the trunk carpet.
3. Remove 2 screws fixing the trunk sill trim panel to the body.


S4324120

4. Pry off the clip, and remove the trunk sill trim panel.

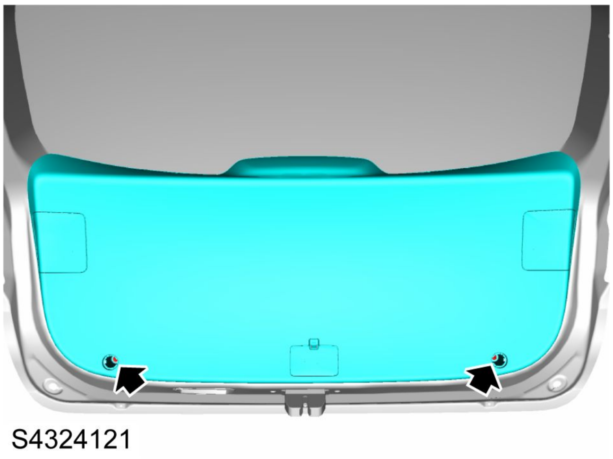
Refit

1. Locate the trunk sill trim panel to the body, and snap it into place.
2. Fit 2 screws fixing the trunk sill trim panel to the body and tighten them.
3. Fit the trunk carpet.
4. Close the tail gate.

Tail Gate Interior Trim Panel

Remove

1. Open the tail gate.
2. Pry off the screw cover, and remove 2 screws fixing the tail gate interior trim panel to the tail gate.



3. Pry off the clip around the tail gate interior trim panel, and remove the tail gate interior trim panel.

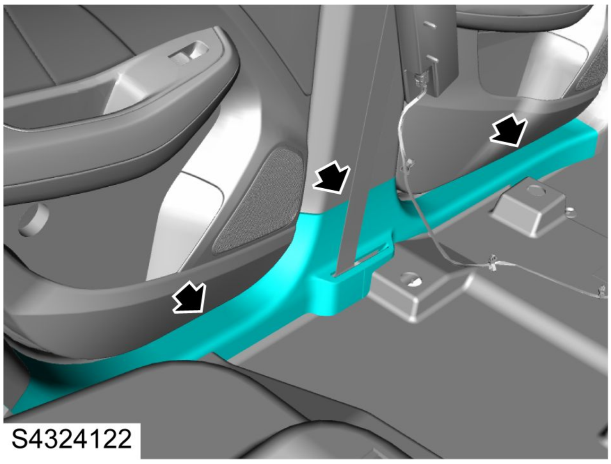
Refit

1. Locate the tail gate interior trim panel to the tail gate, and snap it into place.
2. Fit and tighten 2 screws fixing the tail gate interior trim panel to the tail gate, and press them into the screw cover.
3. Close the tail gate.

Door Sill Trim Panel Assembly

Remove

1. Pull open the front and rear door weatherstrips at the door sill trim panel assembly.
2. Pry off the clip at the joint between the door sill trim panel and the D pillar lower trim panel.
3. Pry off the clip, remove the door sill trim panel assembly and pull out the seat belt.



Refit

1. Fit the seat belt into the door sill trim panel, and tighten the back clip.
2. Locate the door sill trim panel to the body, and snap it into place.
3. Fit the clip at the joint between the door sill trim panel and the lower end of the D pillar lower trim panel in place.
4. Fit the front and rear door weatherstrips.

Seat

Specifications

Torque

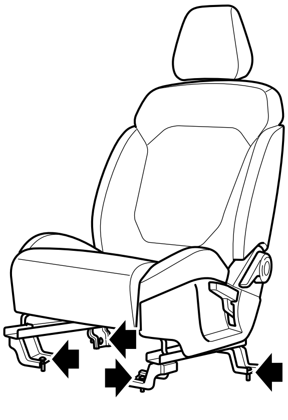
Description	Value
Bolt - front seat to body	40–50Nm
Screw - plate to seat	4–5Nm
Bolt - squab to cushion	31.5–37.5Nm
Bolt - seat lock to body	22Nm

Service Procedures

Front Seat Assembly

Remove

1. Remove the key from the ignition switch, and disconnect the battery. Wait for 10min until the **SRS** backup circuit is discharged, then start to operate.
2. Adjust the seat to the rearmost position.
3. Remove 2 bolts fixing the front end of seat track onto the floor and scrap them.
4. Adjust the seat to the most front position.
5. Remove 2 bolts fixing the rear end of seat track onto the floor and scrap them.



S4213300

6. Disconnect the left seat belt buckle harness connector and the right airbag harness connector.
7. Lift the seats out from the vehicle.

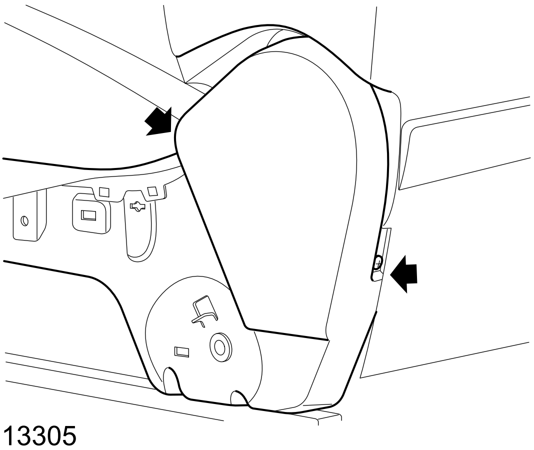
Refit

1. Ensure the seat track aligns with the body floor correctly, and locate front seats on the vehicle.
2. Connect all harness connector clips of front seats.
3. Fix the seats onto the vehicle, fit 2 new bolts fixing the rear end of seat track rail onto the floor, tighten to **40–50Nm** and check the torque.
4. Move the seats backwards fully, fit 2 new bolts fixing the front end of front seat track onto the floor, tighten to **40–50Nm** and check the torque.
5. Connect the battery negative.

Front Seat Interior Trim Panel

Remove

1. Move the front seat assembly to the most front position, and remove 1 screw fixing the rear end of interior trim panel onto the seat.
2. Move the front seat assembly to the rearmost position, and remove 1 screw fixing the front end of interior trim panel onto the seat.



S4213305

3. Pry the clips fixing the seat interior trim panel onto the seat and remove the interior trim panel.

Refit

1. Locate the seat interior trim panel on the seat and flap clips. Ensure clips are refitted in place.
2. Move the seat, refit 2 screws fixing the interior trim panel onto the seat, tighten to **4–5Nm** and check the torque.
3. Move the front seat assembly in place.

Front Seat Exterior Trim Panel

Remove

1. Remove the front seat assembly.

☞**Front Seat Assembly Remove**

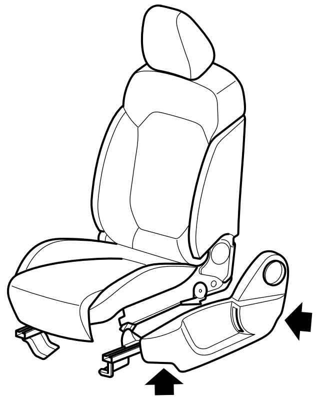
2. manual seat:

   a. Remove the front seat back adjusting handle.

☞**Front Seat Back Adjusting Handle Remove**

   b. Insert the flat-blade tool into the inner side of front seat height adjusting handle, pry the clips fixing the height adjusting handle to the height adjusting handle bracket, and remove the front seat height adjusting handle.

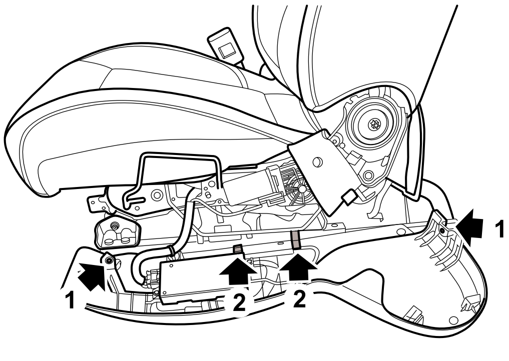
   c. Remove 2 screws fixing the front seat height adjusting handle to the seat exterior trim panel, pry retaining clips and remove the exterior trim panel.



S4213301

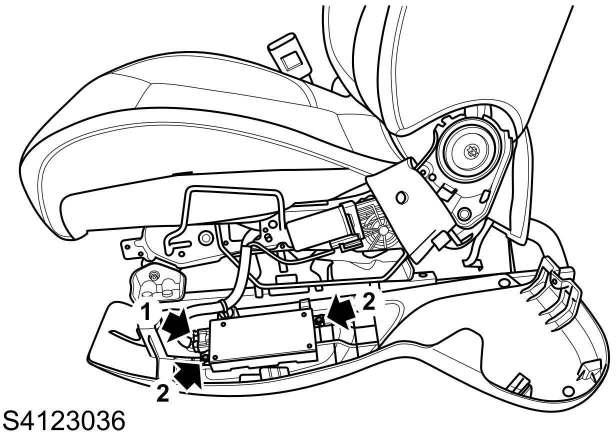
3. power seat (if equipped) :

   a. Remove 2 screws (1) fixing the front seat height adjusting handle to the seat exterior trim panel, pry retaining clips and remove the exterior trim panel.



S4123034

   b. Disconnect the power seat harness connector (1) , remove 2 screws (2) fixing the switch assembly to the seat exterior trim panel , remove the switch assembly。



S4123036

Refit

1. Flap the clips fixing the seat exterior trim panel onto the seat, refit 2 screws fixing the exterior trim panel onto the seat and refit the exterior trim panel.
2. manual seat :

   a. Refit and fix the front seat height adjusting handle (if equipped) .

   b. Refit and fix the front seat back adjusting handle.

☞**Front Seat Back Adjusting Handle Refit**

3. power seat (if equipped) : connect the power seat harness connector , refit screws fixing the switch assembly onto the exterior trim panel.
4. Refit the front seat assembly.

☞**Front Seat Assembly Refit**

Front Seat Back Cover

Remove

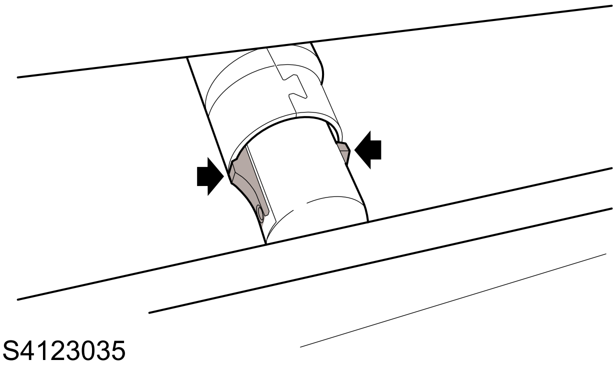
1. Remove the exterior trim panel.

☞**Front Seat Exterior Trim Panel Remove**

2. Remove the interior trim panel.

☞**Front Seat Interior Trim Panel Remove**

3. Remove the seat headrest guide sleeve assembly.
4. Release the fixed clip and elastic clip of the seat back cover.
5. Put your hand into the foaming interior of the seat back, press the clip, and push the seat headrest guide sleeve.



S4123035

6. Mark the C-rings fixing the back cover to the foam, and remove the cover and foaming after removing the C-rings.

Refit

1. Insert the back cover into the back foam and fix it with elastic belt and C-rings. Then check the fitting between the cover and back foam.
2. Refit the back foam with the cover onto the back frame, and fix the back cover with ties and clips.
3. Refit the seat headrest guide sleeve assembly.
4. Fix the back cover with a clip and an elastic clamp.
5. Insert the seat headrest into the guide. Press the button and push down the pillow to adjust the seat pillow to the appropriate position.
6. Refit the interior trim panel.

☞**Front Seat Interior Trim Panel Refit**

7. Refit the exterior trim panel.

☞**Front Seat Exterior Trim Panel Remove Refit**

Front Seat Cushion Cover

Remove

1. Remove the exterior trim panel.

☞**Front Seat Exterior Trim Panel Remove**

2. Remove the interior trim panel.

☞**Front Seat Interior Trim Panel Remove**

3. Remove C-rings and loosen the ties fixing the seat cover onto the cushion frame.
4. Loosen the cushion foam from the cushion frame, and remove cushion foam and cover.
5. Loosen the elastic tie and remove C-rings fixing the cushion cover to the cushion foam. Mark the C-rings.

Refit

1. Insert the cushion foam into the cushion cover and fix it with elastic belt and C-rings. Then check the fitting between the cover and cushion foam.
2. Refit the cushion foam with cover onto the cushion frame, and fix the cushion cover with tie and C-rings.
3. Refit the interior trim panel.

☞**Front Seat Interior Trim Panel Refit**

4. refit the exterior trim panel.

☞**Front Seat Exterior Trim Panel Remove Refit**

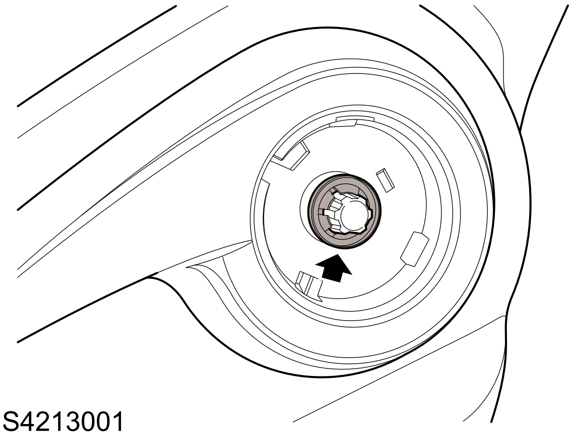
Front Seat Back Adjusting Handle

Remove

1. Remove the front seat assembly.

☞**Front Seat Assembly Remove**

2. Pry up the front seat back adjusting handle along the gap with a flat-blade tool.
3. Pry up the inner edge of retaining circlip with the flat-blade tool, and remove the retaining circlip of front seat back adjusting handle.



S4213001

4. Insert the flat-blade tool into the front seat back adjusting handle from the edge, and slightly pry the front seat back adjusting handle outwards.

Refit

1. Refit the front seat height adjusting handle onto the seat height adjusting shaft, make sure it is refitted in place.
2. Refit retaining circlips onto the front seat height adjusting shaft, make sure they are refitted in place.
3. Cover the front seat height adjusting handle trim cover.
4. Refit the front seat assembly.

☞**Front Seat Assembly Refit**

Front Seat Back Assembly

Remove

1. Remove the front seat assembly.

☞**Front Seat Assembly Remove**

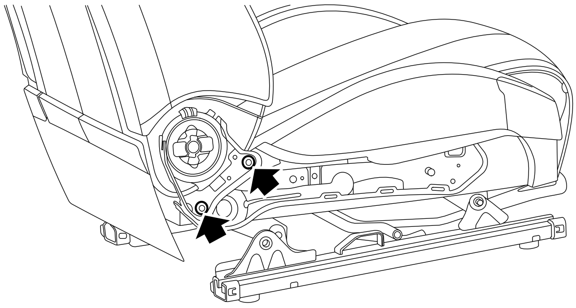
2. Press the left headrest guide sleeve button and remove the headrest.
3. remove the front exterior trim panel.

☞**Front Seat Exterior Trim Panel Remove**

4. Remove the front interior trim panel.

☞**Front Seat Interior Trim Panel Remove**

5. Loosen the hooks fixing the seat back covers to the seat bottom.
6. Remove the bolts (4 on both sides in total) fixing the back onto the cushion frame and remove the back.



S4213790

7. Remove the front seat back assembly.

Refit

1. Fix the back on the cushion frame, fit 4 bolts on both sides, tighten to **31.5–37.5Nm** and check the torque.
2. Fix a seat back cover onto the seat with hooks.
3. Refit the front seat interior trim panel.

☞**Front Seat Interior Trim Panel Refit**

4. Refit the front seat exterior trim panel

☞**Front Seat Exterior Trim Panel Refit**

5. Locate the headrest onto the headrest mounting guide correctly, and then insert it into the guide part. Press the button, and push the headrest downwards in place.
6. Refit the front seat assembly.

☞**Front Seat Assembly Refit**

Front Seat Cushion Assembly

Remove

1. Remove the front seat assembly.

☞**Front Seat Assembly Remove**

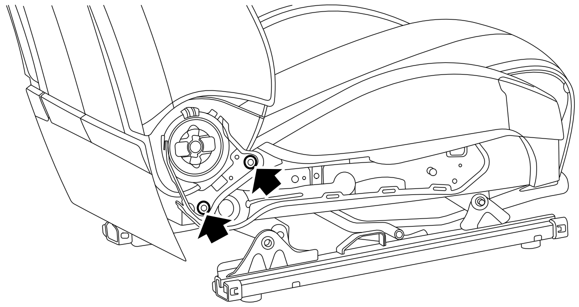
2. Remove the front seat belt buckle.

☞**Front Seat Belt Buckle Remove**

3. Remove the front seat interior trim panel.

☞**Front Seat Interior Trim Panel Remove**

4. Loosen the hooks fixing the seat back covers to the seat bottom.
5. Remove the bolts (4 on both sides in total) fixing the back onto the cushion frame and remove the back.



S4213790

Refit

1. Locate the back on the cushion frame, fit 4 bolts on both sides, tighten to **31.5–37.5Nm** and check the torque.
2. Locate a seat back cover on the seat, and fix it with hooks.
3. Refit the front seat interior trim panel.

☞**Front Seat Interior Trim Panel Refit**

4. Refit the front seat belt buckle.

☞**Front Seat Belt Buckle Refit**

5. Refit the front seat exterior trim panel.

☞**Front Seat Exterior Trim Panel Refit**

6. Refit the front seat assembly.

☞**Front Seat Assembly Refit**

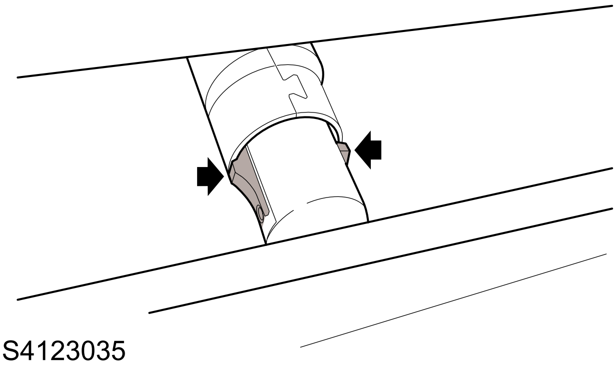
Seat Headrest Guide Sleeve

Remove

1. Remove the front seat assembly.

☞**Front Seat Assembly Remove**

2. Press the headrest guide sleeve button, and pull up the headrest to remove the headrest.
3. Loosen the retaining clips and elastic clamps of seat back cover.
4. Stretch out your hand into the seat back foam, press clamps on the lower end of headrest guide sleeve, and push the headrest guide sleeve upwards.



S4123035

Refit

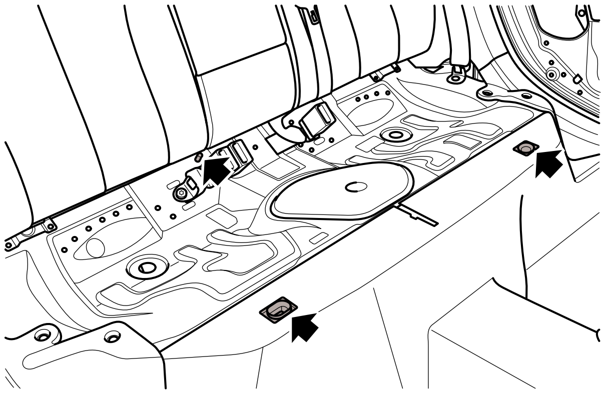
1. Refit 2 seat headrest adjusting guide sleeves onto the seat back frame.
2. Fix the back cover with clips and elastic clamps.
3. Locate the headrest on the headrest mounting guide part correctly, and then insert it to the guide part. Press the button and push the headrest downwards to adjust the headrest to a proper position.
4. Refit the front seat assembly.

☞**Front Seat Assembly Refit**

Rear Seat Cushion Assembly

Remove

1. Uplift the rear seat cushion assembly, and loosen the two front clips fixing the cushion and rear hooks.



S4213004

2. Remove rear seat cushions.

Refit

1. Move rear seat cushions to the compartment.
2. Refit and fix the rear seat cushion assembly by fastening rear seat cushion clips correspondingly.

Rear Seat Cushion Cover and Foam

Remove

1. Remove rear seat cushions.

☞**Rear Seat Cushion Assembly Remove**

2. Loosen the cable and J-clamp fixing the cushion covers onto the seat frame.
3. Mark the layout positions of C-rings fixing the cushion covers and foam, and remove the covers and foam.

Refit

1. Refit the cushion cover and fix it onto the cushion foam with C-rings.
2. Fix the cushion cover and foaming onto the seat frame with cable and J-clamp.
3. Refit the rear seat cushion assembly.

☞**Rear Seat Cushion Assembly Refit**

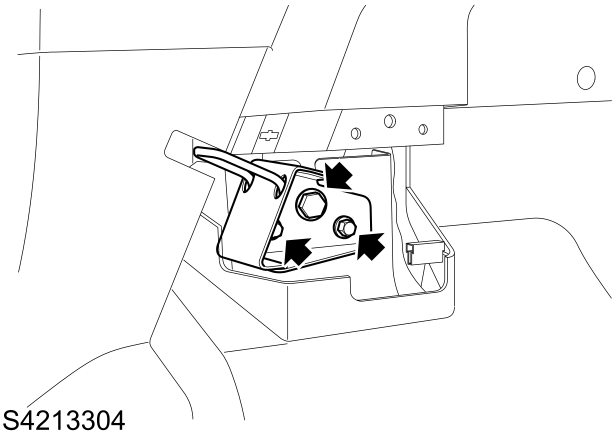
Rear Seat Back Latch

Remove

1. Open rear doors, pull up the control lock knob on the top of back and lay the rear seats to the folding position to facilitate the remove of rear seat back latches.
2. Remove C Pillar Upper Trim Panel

☞**BC Pillar Upper Trim Panel Remove**

3. Remove 3 screws fixing the rear seat back latches onto the body and remove the rear seat back latches.



S4213304

Refit

1. Locate a rear seat back latch on the body, fit 3 bolts, tighten to **22Nm** and check the torque.
2. Refit C Pillar Upper Trim Panel

☞**BC Pillar Upper Trim Panel Refit**

3. Adjust the rear seat to the original position.

Rear Seat Back Assembly

Remove

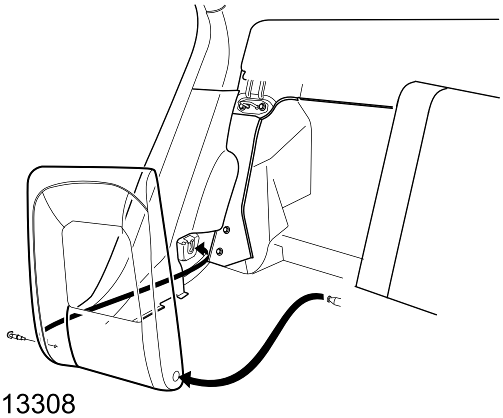
1. Remove rear seat cushions.

☞**Rear Seat Cushion Assembly Remove**

2. Remove the rear middle seat belt.

☞**Rear Middle Seat Belt Refit**

3. Pull up the control lock knob on the top of back and lay the rear seats to the folding position.
4. Uplift rear seat backs, and remove both sides of rear seat back from the bracket. Move the rear seat backs out from the vehicle.



S4213308

Refit

1. Locate the right back of rear seats on the bracket and refit it in place.
2. Locate the left back of rear seats on the bracket and refit it in place.
3. Refit the rear middle seat belt.

☞**Rear Middle Seat Belt Refit**

4. Pull up the control lock knob on the top of back and upturn the rear seat backs to the backmost position.
5. Refit the rear seat cushion assembly.

☞**Rear Seat Cushion Assembly Refit**

Rear Seat Back Cover and Foam

Remove

1. Remove rear seat backs.

Rear Seat Back Assembly Remove

2. Remove seat headrest guide sleeve.

Seat headrest guide sleeves remove

3. Remove 1 screw fixing the back control lock knob and disconnect the rear seat control knob from the cable. Then remove the back control lock knob.
4. Pull out elastic clamps from seat covers.
5. Remove the retaining clips of rear seat back panel.
6. Remove C-rings fixing seat covers from the rear seat back area.
7. Mark the layout positions of C-rings fixing the back covers and foaming, and remove the C-rings, covers and foaming.

Refit

1. Align the cover with the front side of back foam, and fix it with C-rings.
2. Refit backs onto the back frame, and fix the seat back panel to the back of back foam with clips.
3. Fix the back cover to the back of the seat back with C-rings and elastic clamps of the back cover.
4. Connect the rear seat control lock knob to cable, fit and tighten 1 screw to the control lock knob of rear seats.
5. Refit seat headrest guide sleeves.

Seat Headrest Guide Sleeve Refit

6. Refit the rear seat back.

Rear Seat Back Assembly Refit

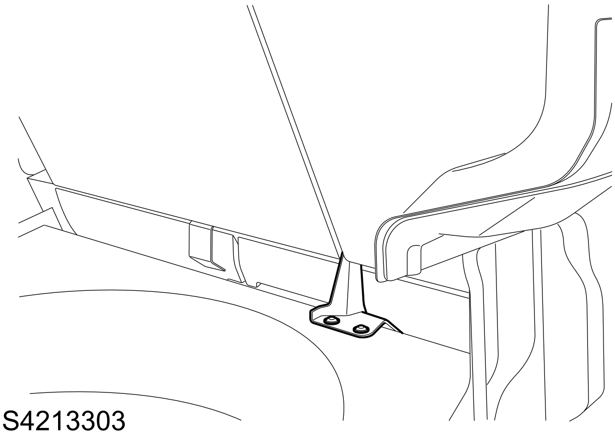
Rear Seat Back Hinge Bracket

Remove

1. Remove the rear seat back assembly.

Rear Seat Back Assembly Remove

2. Remove 2 bolts connecting the rear seat back hinge bracket with the body.



S4213303

3. Remove the rear seat back hinge bracket.

Refit

1. Locate the hinge bracket of rear seat backs on the bolt holes on the body sheet metal, and refit it onto the body sheet metal.
2. Refit 2 bolts connecting the rear seat back hinge bracket with the body and tighten up.
3. Refit the rear seat back assembly.

Rear Seat Back Assembly Refit

Fixed Windows

Service Procedures

Windscreen

1.

Remove

1. Remove the A/C air inlet grille assembly.

☞**Instrument Panel End Cover Assembly Remove**

2. Remove the front view camera module.

☞**Instrument Panel End Cover Assembly Remove**

3. Remove the rain sensor.

☞**Instrument Panel End Cover Assembly Remove**

4. Remove the manual anti-dazzle interior rearview mirror.

☞**Instrument Panel End Cover Assembly Remove**

5. Remove the A pillar upper trim panel.

☞**Instrument Panel End Cover Assembly Remove**

6. Loosen the clip and disconnect the harness connector.
7. Put suitable coverings inside and outside the vehicle to prevent scratches.
8. Put 2 suction cups symmetrically on both sides of the windscreen (outside).
9. Pierce a through-hole in the adhesive, pass a cutting wire through or use a cutter directly to cut the adhesive on the glass and surroundings.
10. Remove the windscreen with suction cups on both sides aided by an assistant.
11. To refit, remove the weatherstrips from the body, and clean the adhesive from the original windscreen and the vehicle body.

Refit

1. Clean the mounting position of the windscreen on the body with a soft brush. The cleaning area is about 20mm in width. Using a suitable cleaning cloth to wipe the cleanser area in the same direction with that of cleanser coating. Do not wipe back and forth.
2. Evenly apply a thin layer of primer, about 15mm in width, to the mounting position of the windscreen on the body.
3. Clean the glass bonding surface with a soft brush. The cleaned area should be larger than the primer track area (about 15mm in width). Using a suitable cleaning cloth to wipe the cleanser area in the same direction with that of cleanser coating. Do not wipe back and forth.
4. On the back of the glass, apply glass primer along the primer track and ensure the primer track area (about 15mm in width; the white line on the glass is the glue track line) is completely covered by the primer, but the primer should not exceed the black area and the white track line cannot be seen from the outside of the glass.
5. Apply glass adhesive to the glass with a gluer. Pay attention to smooth application of adhesive at the corners and avoid spillage.
6. Press the windscreen into the screen frame on the body with suction cups. Insert the glass locating pins into the roof mounting holes, adjust the glass in the X and Y directions to ensure uniform gaps between the upper end of the glass and the roof panel and between the glass and the panels on both sides of body, and finally press the glass hard.
7. Fix the upper end of the windscreen to the roof panel with four tapes, to prevent the windscreen from sliding down. In addition, keep the adhesive dry for 24 hours.
8. Remove the tape, pour water on the windscreen assembly, and check for leak. If any leak is found, block the leaking location with adhesive. If it still leaks, remove the windscreen assembly and repeat the entire repair procedure.
9. Connect the harness connector, and snap it into place.
10. Fit the A pillar upper trim panel.

☞**Instrument Panel End Cover Assembly Remove**

11. Fit the manual anti-dazzle interior rearview mirror.

☞**Instrument Panel End Cover Assembly Remove**

12. Fit the rain sensor.

☞**Instrument Panel End Cover Assembly Remove**

13. Fit the front view camera module.

☞**Instrument Panel End Cover Assembly Remove**

14. Fit the A/C air inlet grille assembly.

☞**Instrument Panel End Cover Assembly Remove**

Rear Window

1.

Remove

1. Disconnect the negative battery cable.
2. Remove the rear window wiper motor.

☞**Instrument Panel End Cover Assembly Remove**

3. Remove the D pillar upper trim panel.

☞**Instrument Panel End Cover Assembly Remove**

4. Remove the high-mounted stop lamp assembly.

☞**Instrument Panel End Cover Assembly Remove**

5. Pry off the clip, and remove the D pillar exterior trim panel.
6. Put suitable coverings inside and outside the vehicle to prevent scratches.
7. Put 2 suction cups symmetrically on both sides of the rear window (outside).
8. Pierce a through-hole in the adhesive, pass a cutting wire through or use a cutter directly to cut the adhesive on the glass and surroundings.
9. Remove the rear window with suction cups on both sides aided by an assistant.
10. To refit, clean the adhesive on the original rear window and the vehicle body.

Refit

1. Disconnect the negative battery cable.
2. Clean the mounting position of the rear window on the body with a soft brush. The cleaning area is about 20mm in width. Using a suitable cleaning cloth to wipe the cleanser area in the same direction with that of cleanser coating. Do not wipe back and forth.
3. Evenly apply a thin layer of primer, about 15mm in width, to the mounting position of the rear window on the body.
4. Clean the glass bonding surface with a soft brush. The cleaned area should be larger than the primer track area (about 15mm in width). Using a suitable cleaning cloth to wipe the cleanser area in the same direction with that of cleanser coating. Do not wipe back and forth.
5. On the back of the glass, apply glass primer along the primer track and ensure the primer track area (about 15mm in width; the white line on the glass is the glue track line) is completely covered by the primer, but the primer should not exceed the black area and the white track line cannot be seen from the outside of the glass.
6. Apply glass adhesive to the glass with a gluer. Pay attention to smooth application of adhesive at the corners and avoid spillage.
7. Press the rear window into the window frame on the body with suction cups. Insert the glass locating pins into the roof mounting holes, adjust the glass in the X and Y directions to ensure uniform gaps between the upper end of the glass and the roof panel and between the glass and the panels on both sides of body, and finally press the glass hard.
8. Fix the upper end of the rear window to the roof panel with two tapes, to prevent the rear window from sliding down, and keep the adhesive dry for 24 hours.
9. Remove the tape, pour water on the rear window assembly, and check for leak. If any leak is found, block the leaking location with adhesive. If it still leaks, remove the rear window glass assembly and repeat the entire repair procedure.
10. Locate the D pillar exterior trim panel to the correct position, and snap it into place.
11. Fit the high-mounted stop lamp assembly.

☞**Instrument Panel End Cover Assembly Remove**

12. Fit the D pillar upper trim panel.

☞**Instrument Panel End Cover Assembly Remove**

13. Fit the rear window wiper motor.

☞**Instrument Panel End Cover Assembly Remove**

14. Connect the negative battery cable.

Rear Quarter Window

1.

Remove

1. Remove the D pillar upper trim panel.

☞**Instrument Panel End Cover Assembly Remove**

2. Carefully cut the adhesive between the rear quarter window and the vehicle body using a scraper and avoid scratching the finishing coat.
3. Loosen the clip and remove the rear quarter window from the vehicle.
4. Remove the adhesive on the rear quarter window and frame with a blade.

Refit

1. Clean the inner side of the quarter window using a cleaning cloth with cleanser. The cleaning width should be approximately 20mm inward along the wrapped edge. Wipe off excess solvent with another cleaning cloth.
2. On the inner side of the quarter window, throughly and evenly apply a thin layer of primer to the area about 15mm inward along the wrapped edge to ensure complete coverage of primed track area, while the primer should not exceed the black area.
3. Clean the mounting position of the quarter window on the body with a soft brush. The cleaning area is about 20mm in width.
4. Evenly apply a thin layer of primer, about 15mm in width, to the mounting position of the rear quarter window on the body.
5. Press hard to fit the rear quarter window into the rear quarter window frame.
6. Secure the rear quarter window into the rear quarter window frame with tapes, and keep the adhesive dry for 24 hours.
7. Remove the tape, pour water on the rear quarter window, and check for leak. If any leak is found, block the leaking location with adhesive. If it still leaks, remove the rear quarter window and repeat the entire repair procedure.
8. Fit the D pillar upper trim panel.

☞**Instrument Panel End Cover Assembly Remove**

Bumpers, Fascias and Grille

Specifications

Torque

Description	Value
Bolt-From front bumper impact bar to body in white	40–50Nm
Screw-From front bumper impact bar to fend upper tie bar	7–10Nm
Bolt-Charging bracket to front module	7–10Nm
Bolt-From rear bumper impact bar to body in white	19–25Nm
Bolt-front bumper to front segment module	4–6Nm
Screw-rear bumper beam back to the body back buffer	2.7–3.3Nm

Service Procedures

Front Bumper Beam Assembly

Remove

1. Disconnect the battery negative.
2. Remove the front bumper.

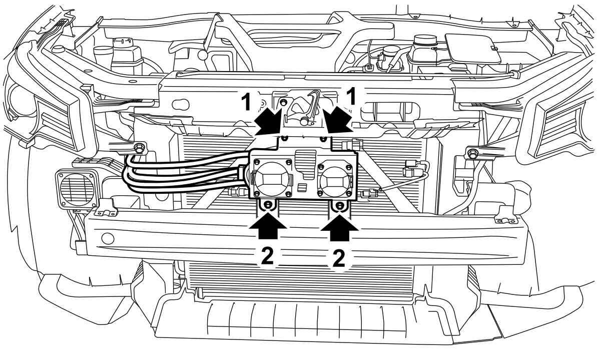
☞**Front Bumper Remove**

3. Remove the horn.
4. Remove radiator airflow side deflector.

☞**Radiator Airflow Side Deflector - Left Remove**

☞**Radiator Airflow Side Deflector - Right Remove**

5. Remove 2 bolts （ 1 ） fitting the charge door bracket to the front-end module and 2 nuts （ 2 ） to the front bumper beam.



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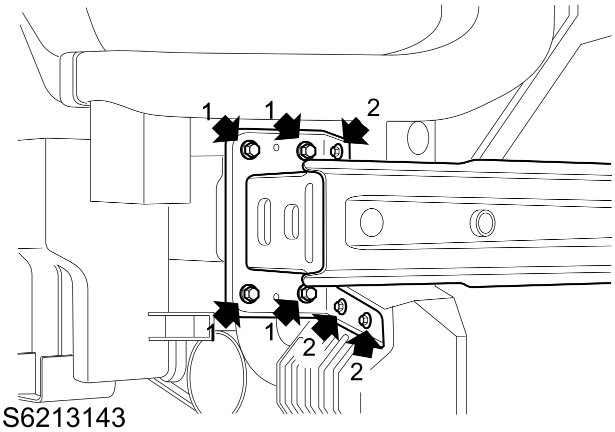
6. Remove 8 bolts (1) fixing the right and left sides of front bumper beam onto the body and 6 screws (2) onto the front module.



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7. Remove the front bumper beam.

Refit

1. Position the front bumper beam to the body.
2. Refit 8 bolts fixing both sides of the front bumper beam onto the body, tighten to **40–50Nm** and check the torque.
3. Refit 6 screws fixing both sides of the front bumper beam onto the body, tighten them to **7–10Nm** and check the torque.
4. Refit 2 bolts （ 1 ） fitting the charge door bracket to the front-end module and 2 nuts （ 2 ） to the front bumper beam, tighten to **7–10Nm**,and check the torque.
5. Refit radiator airflow side deflector.

☞**Radiator Airflow SideDeflector - Left Refit**

☞**Radiator Airflow Side Deflector - Right Refit**

6. Refit the horn.
7. Connect the battery negative.

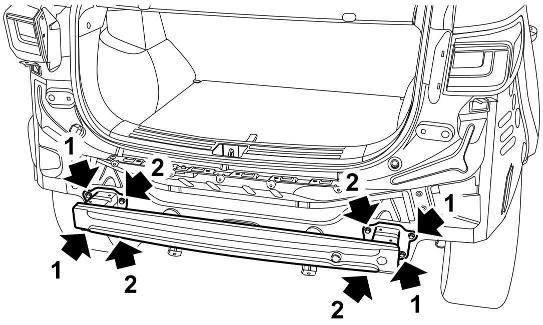
Rear Bumper Beam Assembly

Remove

1. Remove the rear bumper.

☞**Rear Bumper Assembly Remove**

2. Remove 4 nuts fixing the rear bumper beam to the rear end of the vehicle body (1) .
3. Remove 4 bolts fixing the rear bumper beam to the rear end of the vehicle body (2) .



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4. Remove the rear bumper beam from the body carefully.

Refit

1. Refit 4 nuts fixing both sides of the rear bumper beam to the rear end of body, tighten to**19–25Nm**, and check the torque.
2. Refit 4 bolts fixing both sides of the rear bumper beam to the rear end of body, tighten to**19–25Nm**, and check the torque.
3. Refit the rear bumper.

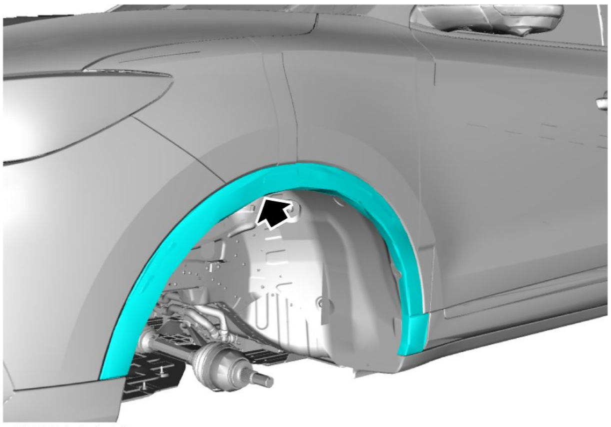
☞**Rear Bumper Assembly Refit**

Front Bumper

1.

Remove

1. Disconnect the negative battery cable.
2. Loosen the clip and remove the wheel brow.



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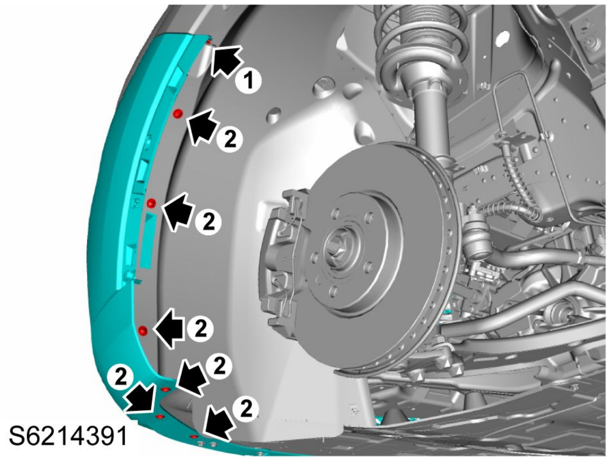
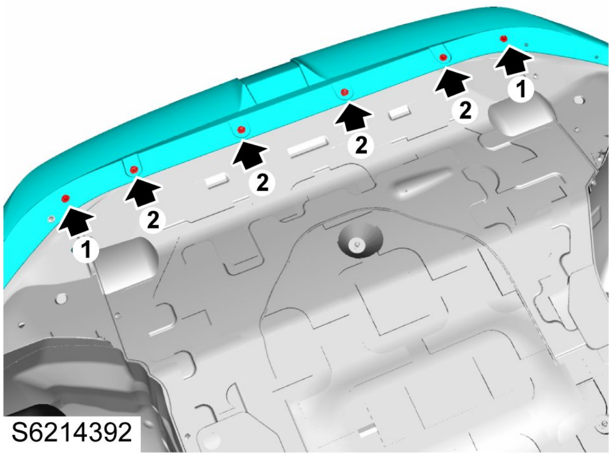
3. Remove 1 screw (1) fixing the front bumper to the front left (right) fender.
4. Remove 6 screws (2) fixing the front bumper to the left (right) front wheelhouse liner.



S6214391

5. Remove 2 bolts (1) fixing the front bumper to the bottom deflector.
6. Remove 4 bolts (2) fixing the front bumper to the front-end module.



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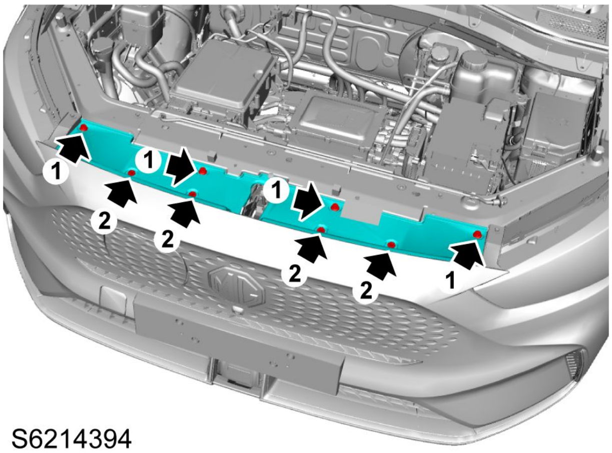
7. Loosen 4 clips (1) fixing the front bumper cover plate to the front bumper upper support.
8. Remove 4 bolts (2) fixing the front bumper cover plate to the front bumper upper support.



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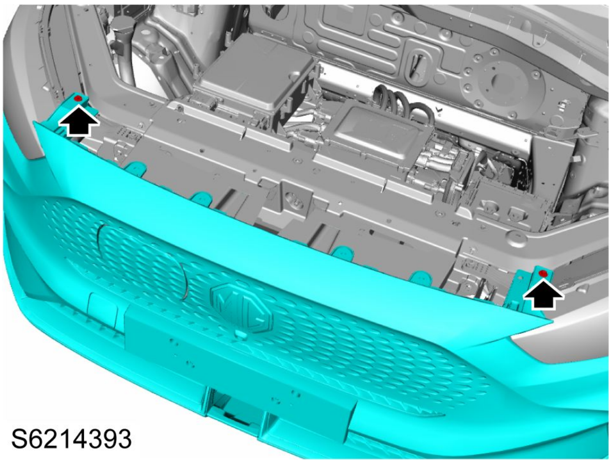
9. Remove 2 bolts fixing the front bumper to the headlamp.

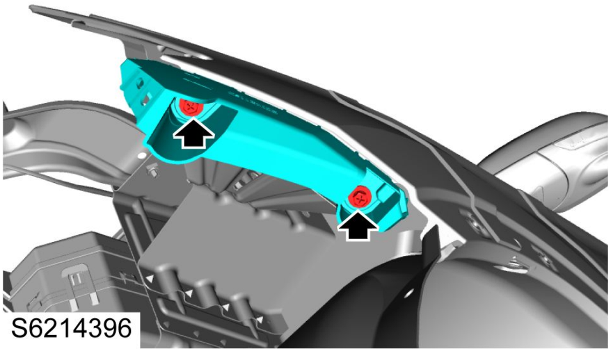


S6214393

10. With assistance, lift both sides of the front bumper carefully and pull it outward, to remove the front bumper assembly from brackets at both sides of the body.
11. Remove the ambient temperature sensor on the front bumper lower intake grille, disconnect the harness connector, and remove the front bumper.
12. If necessary, remove 3 screws fixing the front view camera assembly to the front bumper and remove the front view camera.
13. If necessary, remove the mounting brackets on both sides of the front bumper.
    a. Remove the headlamp assembly.

Headlamp Assembly Remove

    b. Remove 2 bolts fixing the mounting brackets on both sides of the front bumper to the fender, and remove the mounting brackets on both sides of the front bumper.



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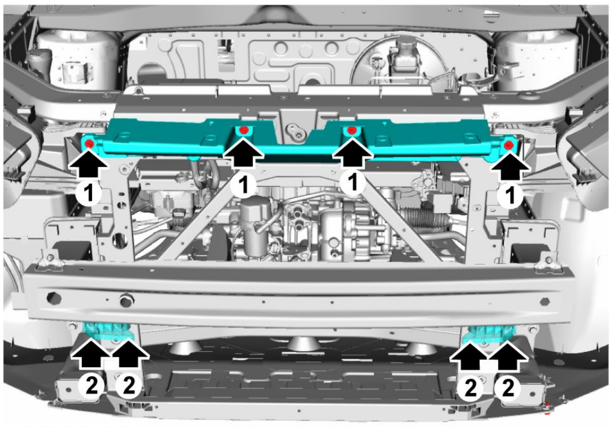
14. If necessary, remove 4 bolts (1) fixing the front bumper upper support to the front-end module, and remove the front bumper upper support.
15. If necessary, remove 4 bolts (2) fixing the front bumper middle support to the front-end module, and remove the front bumper middle support.



S6214395

Refit

1. To remove the upper support, fix the upper support on the front-end module, fit and tighten 4 bolts.
2. To remove the middle support, fix the middle support on the front-end module, fit and tighten 4 bolts.
3. To remove the mounting brackets on both sides of the front bumper, fit the mounting brackets on both sides of the front bumper.
    a. Fix the mounting brackets on both sides of the front bumper to the body, fit and tighten 2 bolts.
    b. Fit the headlamp assembly.

Headlamp Assembly Refit

4. To remove the front view camera, fix the front view camera to the front bumper, fit 3 screws, and tighten them.
5. Fit the ambient temperature sensor on the air intake grille of the front bumper, and snap it into place.
6. With assistance, position the front bumper on the body, connect the harness connector, and snap it into place.

7. Fit and tighten 2 bolts from the front bumper to the headlamp.
8. Fix the front bumper cover plate to the upper support of the front bumper, fit and tighten 4 bolts and snap it into place.
9. Fit 4 bolts fixing the front bumper to the front-end module, tighten them to **4–6Nm**, and check the torque.
10. Fix the front bumper to the bottom deflector, fit and tighten 2 bolts.
11. Fit and tighten 6 screws fixing the front bumper to the front left (right) wheelhouse liner.
12. Fit and tighten 1 screw fixing the front bumper to the front left (right) fender.
13. Fit the wheel brow, and snap it into place.
14. Connect the negative battery cable.

Rear Bumper

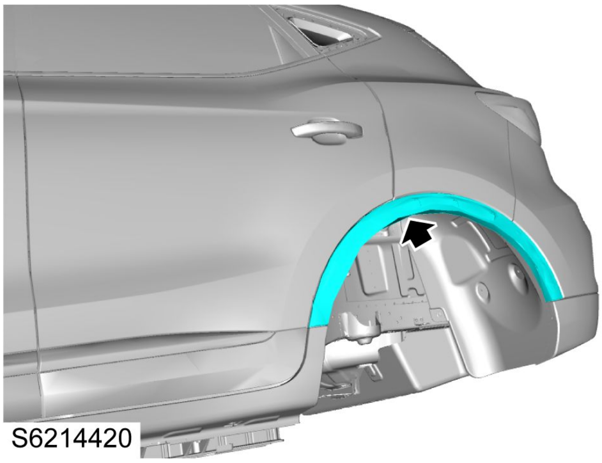
1.

Remove

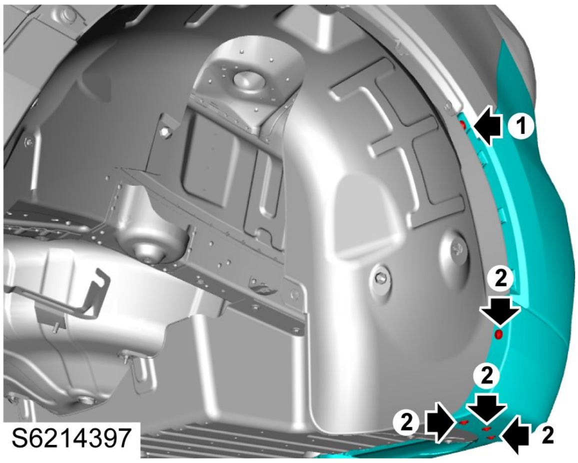
1. Open the tail gate.
2. Remove the tail lamp assembly.

☞**Tail Lamp Assembly Remove**

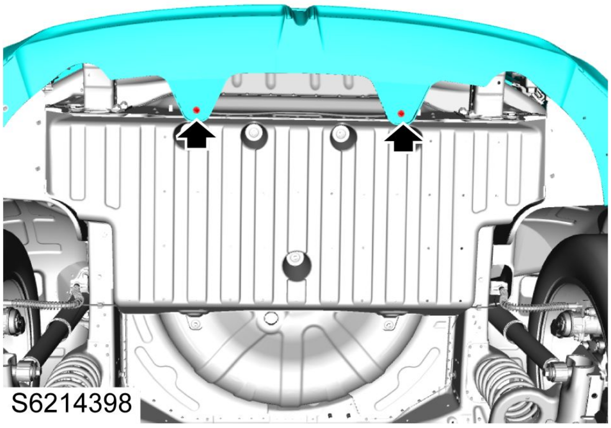
3. Loosen the clip and remove the wheel brow.



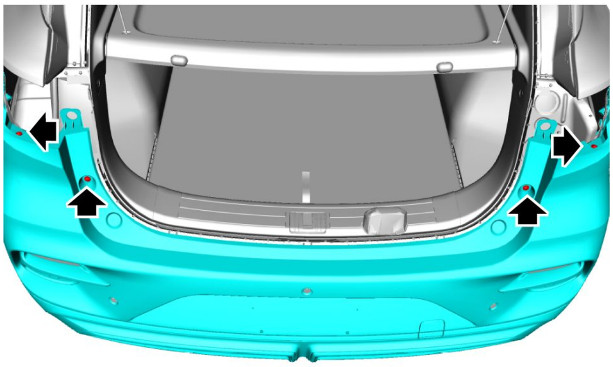
4. Remove 1 screw (1) fixing the left (right) side of rear bumper to the left (right) fender.
5. Remove 4 screws (2) fixing the left (right) side of rear bumper to the rear left (right) wheelhouse liner.



6. Remove 2 screws fixing the rear bumper to the rear bumper bracket.



7. Pry off part of the trunk weatherstrips, and remove 4 screws fixing the rear bumper to the body.



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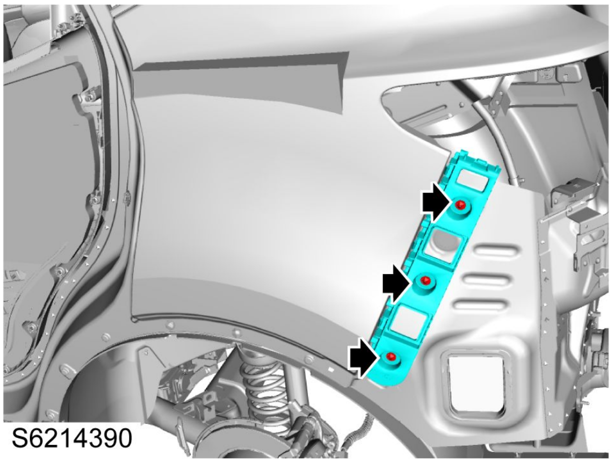
8. With assistance, loosen the retaining clip, remove the rear bumper assembly and disconnect the harness connector.
9. Remove 3 screws fixing the left and right side brackets of the rear bumper to the body, and remove the side bracket of the rear bumper.



S6214390

Refit

1. Fix the left and right brackets of the rear bumper to the body, fit and tighten 3 screws.
2. Connect the harness connector, locate the rear bumper to the body with assistance, and snap it into place.
3. Fit 4 screws fixing the rear bumper to the body, tighten them to **2.7–3.3Nm**, check the torque, and fit the trunk weatherstrips.
4. Fit and tighten 2 screws fixing the rear bumper to the rear bumper bracket.
5. Fit and tighten 4 screws fixing the rear left (right) wheelhouse liner to the rear bumper.
6. Fit and tighten 1 screw fixing the rear bumper to the left (right) fender.
7. Fit the wheel brow, and snap it into place.
8. Fit the tail lamp assembly.

☞**Tail Lamp Assembly Refit**

9. Close the tail gate.

Exterior Trim and Paneling

Specifications

Torque

Description	Value
Screw-A/C air intake grille to body	1.5–2Nm
Bolt-A/C air intake grille to body	2–3Nm

Service Procedures

Roof Rack Assembly

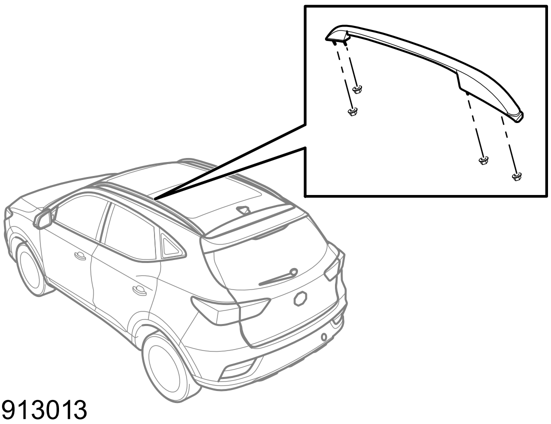
Remove

1. Remove the interior roof trim panel.

☞**Interior Roof Trim Panel (With Sunroof) Remove**

☞**Interior Roof Trim Panel (With Sunroof) Remove**

2. Remove 4 nuts securing the roof rack onto the roof.
3. Remove the binder close to the roof groove rack mounting hole.



S6913013

4. Remove the roof rack.

Refit

1. Raise the rack guide on one side over the roof horizontally, and align 4 bolts with the roof sheet metal mounting holes orderly from front to back.
2. After confirming that all bolts are aligned with the mounting holes, lower down the rack slowly and tear the protective film of the sealing washer up carefully to allow the sealing washer to be in full contact with the sheet metal.
3. Secure the roof rack onto the roof with 4 nuts.
4. Operate the same on the other side.
5. Fit the interior roof trim panel.

☞**Interior Roof Trim Panel (Without Sunroof) Refit**

☞**Interior Roof Trim Panel (Without Sunroof) Refit**

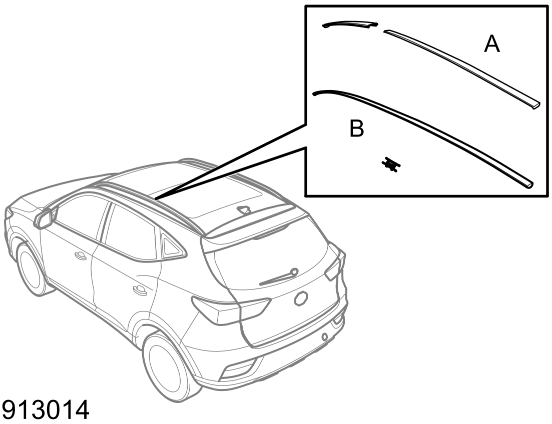
Roof Molding Assembly

Remove

1. Remove the roof rack assembly (if installed).

☞**Roof Rack Assembly Remove**

2. Remove the roof molding (see Diagram A for the model with a roof rack; see Diagram B for the model without a roof rack). Remove and scrap the mounting clip of roof molding if it comes off or is damaged.



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Refit

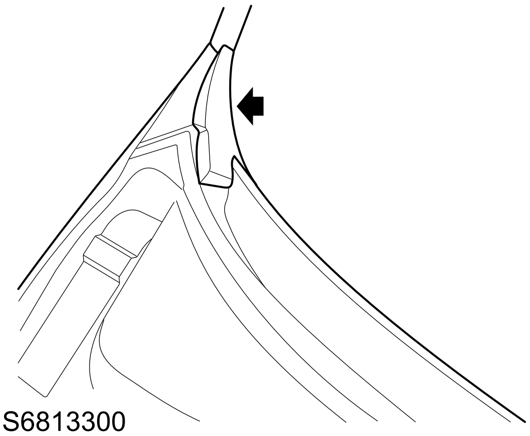
1. Wipe the molding mounting area on the vehicle body surface.
2. Refit a new mounting clip of roof moulding into the roof groove if any clip comes off or is damaged.
3. Refit the roof moudling.
4. Refit the roof rack assembly.

☞**Roof Rack Assembly Refit**

A/C Air Intake Grille Assembly

Remove

1. Pry up the clips of A/C intake grille side corner and remove the A/C intake grille side corner.



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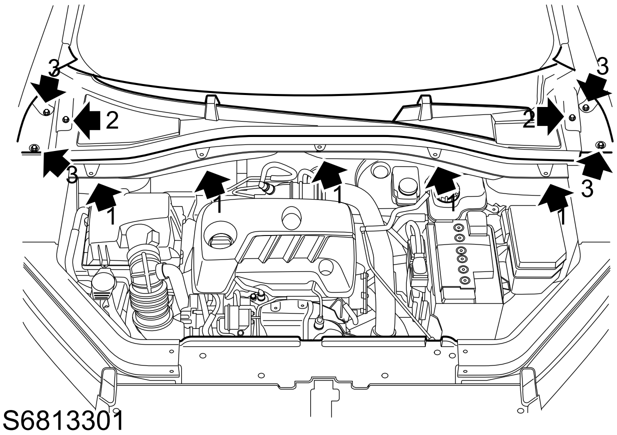
2. Remove the windshield wiper arm assembly.

☞**Windshield Wiper Arm Assembly Refit**

3. Remove 5 screws (1), 2 bolts (2) on both sides and 4 clips (3) fixing the A/C intake grille onto the body.



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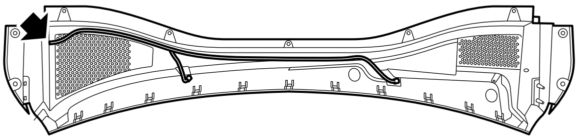
4. Disconnect the windshield washer pump hose with the windshield nozzle hose.



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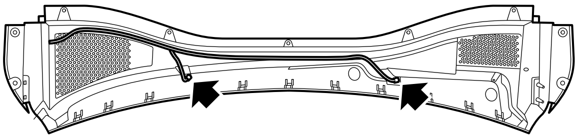
5. Disconnect the windshield nozzle hose from the nozzle, and remove the windshield nozzle and nozzle hose.



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Refit

1. Connect the windshield nozzle and hose.
2. Connect the windshield washer pump hose to the windshield nozzle hose, and locate the A/C intake grille on the body.
3. Refit 5 screws fixing the middle of A/C intake grille onto the body, tighten to **1.5–2Nm** and check the torque.
4. Refit 4 clips and 2 bolts fixing the A/C intake grille to both sides of the body, tighten to **2–3Nm** and check the torque.
5. Refit the windshield wiper arm assembly.

☞**Windshield Wiper Arm Assembly Refit**

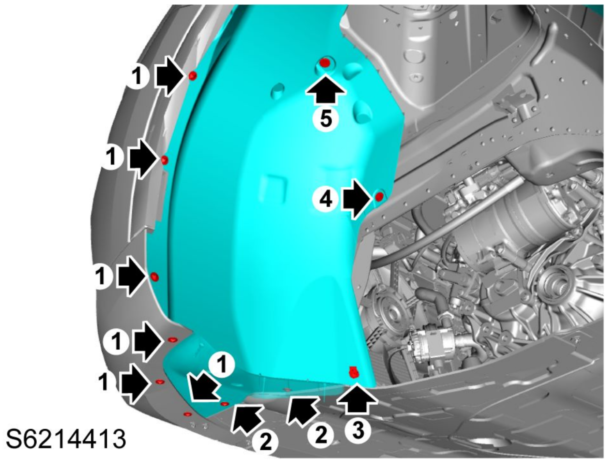
6. Locate the A/C intake grille side corner, and flap clips in place.

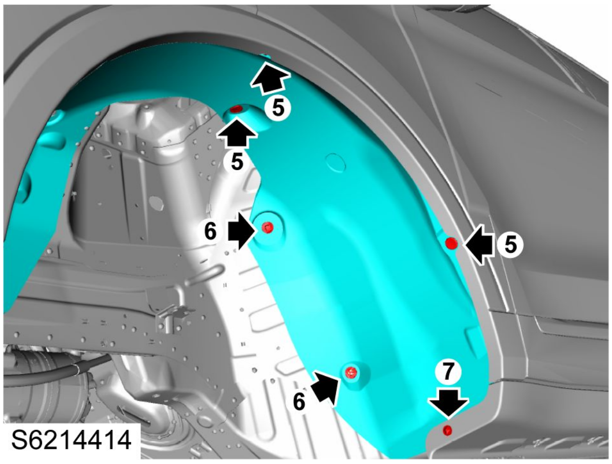
Front Wheelhouse Liner Assembly

1.

Remove

1. Remove 6 screws (1) fixing the front left wheelhouse liner to the front bumper.
2. Remove 2 screws (2) and 1 bolt (3) fixing the front left wheelhouse liner to the front bottom deflector.
3. Remove 1 bolt (4) and 4 clips (5) fixing the front left wheelhouse liner to the body.
4. Remove 2 plastic nuts (6) fixing the front left wheelhouse liner to the body.
5. Remove 1 screw (7) fixing the front left wheelhouse liner to the body.





6. Remove the front left wheelhouse liner.
7. Change the Step 2 to: Remove 3 screws fixing the front right wheelhouse liner to the front bottom deflector. Remove the front right wheelhouse liner as described above.

Refit

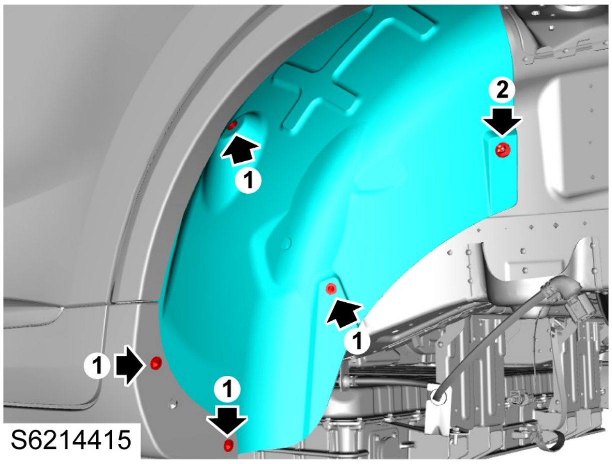
1. Fix the front left wheelhouse liner to the body and align it with the mounting hole.
2. Fit and tighten 1 screw fixing the front left wheelhouse liner to the body.
3. Fit and tighten 2 plastic nuts fixing the front left wheelhouse liner to the body.
4. Fit and tighten 4 clips and 1 bolt fixing the front left wheelhouse liner to the body.
5. Fit and tighten 2 screws and 1 bolt fixing the front left wheelhouse liner to the front bottom deflector.
6. Fit and tighten 6 screws fixing the front left wheelhouse liner to the front bumper.
7. Change the Step 5 to: Fit and tighten 3 screws fixing the front right wheelhouse liner to the front bottom deflector. Fit the front right wheelhouse liner as described above.

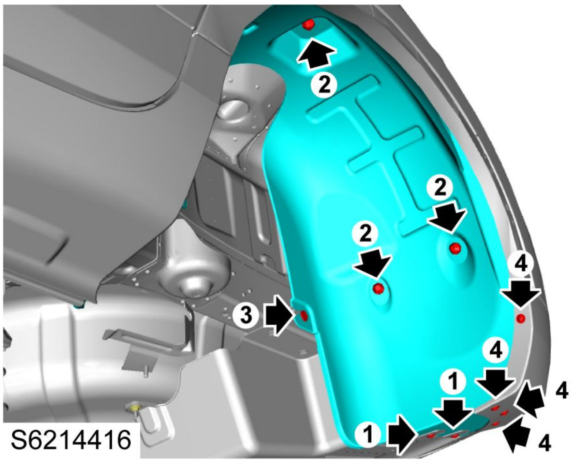
Rear Wheelhouse Liner Assembly

1.

Remove

1. Remove 6 screws (1) fixing the rear left wheelhouse liner to the body.
2. Remove 4 plastic nuts (2) fixing the rear left wheelhouse liner to the body.
3. Remove 1 clip (3) fixing the rear left wheelhouse liner to the body.
4. Remove 4 screws (4) fixing the rear left wheelhouse liner to the rear bumper.





5. Remove the rear left wheelhouse liner.
6. Change the Step 3 to: Remove 2 clips fixing the rear right wheelhouse liner to the body. Remove the rear right wheelhouse liner as described above.

Refit

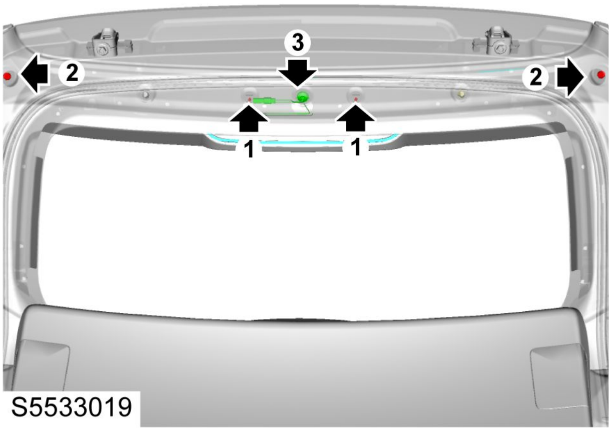
1. Fix the rear left wheelhouse liner to the body and align it with the mounting hole.
2. Fit and tighten 4 screws fixing the rear left wheelhouse liner to the rear bumper.
3. Fit 1 clip fixing the rear left wheelhouse liner to the body.
4. Fit and tighten 4 plastic nuts fixing the rear left wheelhouse liner to the body.
5. Fit and tighten 6 screw fixing the rear left wheelhouse liner to the body.
6. Change the Step 3 to: Fit 2 clips fixing the rear left wheelhouse liner to the body. Fit the rear right wheelhouse liner as described above.

Spoiler Assembly

1.

Remove

1. Disconnect the negative battery cable.
2. Open the tail gate, loosen the clip and remove the high-mounted stop lamp cover plate.
3. Pry off the spoiler bolt cover, remove 2 bolts (2) and 2 nuts (1) fixing the spoiler to the body, and disconnect the high-mounted stop lamp harness connector (3).



4. Pry off the spoiler retaining clip, and remove the spoiler assembly.

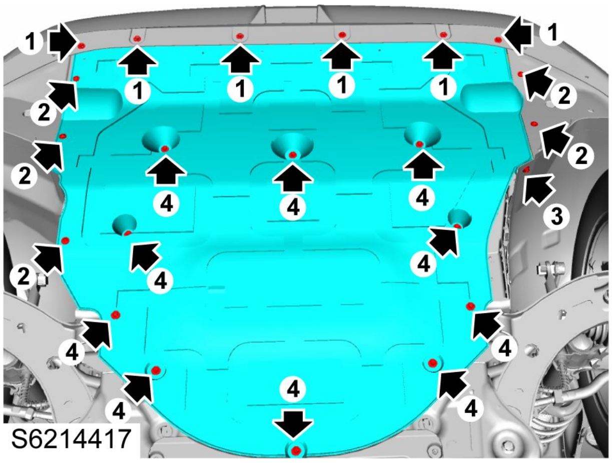
Refit

1. Locate the spoiler assembly to the tail gate, and snap it into place.
2. Fit 2 nuts and 2 bolts fixing the spoiler assembly to the body, and tighten them.
3. Connect the harness connector of the high-mounted stop lamp, and fit the bolt cover.
4. Fit the high-mounted stop lamp cover plate, and snap it into place.
5. Connect the negative battery cable.

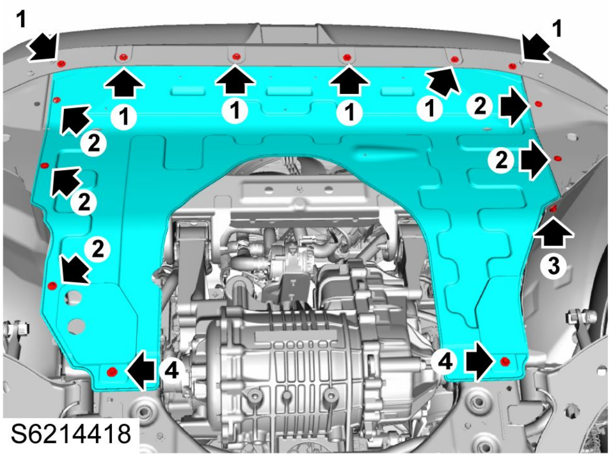
Bottom Deflector

Remove

1. Lift the vehicle.
2. Remove the bottom deflector - high-level configuration.
   a. Remove 6 bolts (1) fixing the bottom deflector to the front bumper.
   b. Remove 5 screws (2) and 1 bolt (3) fixing the bottom deflector to the left and right wheelhouse liners.
   c. Remove 10 bolts (4) fixing the bottom deflector to the front subframe, and remove the bottom deflector - high-level configuration.



3. Remove the bottom deflector - low-level configuration.
   a. Remove 6 bolts (1) fixing the bottom deflector to the front bumper.
   b. Remove 5 screws (2) and 1 bolt (3) fixing the bottom deflector to the left and right wheelhouse liners.
   c. Remove 2 bolts (4) fixing the bottom deflector to the front subframe, and remove the bottom deflector - low-level configuration.



Refit

1. Locate the bottom deflector to the body.
2. Fit the bottom deflector - low-level configuration.
   a. Fit 2 bolts fixing the bottom deflector to the front subframe, and tighten them.

  - b. Fit 6 bolts fixing the bottom deflector to the front bumper, and tighten them.
  - c. Remove 5 screws and 1 bolt fixing the bottom deflector to the left and right wheelhouse liners, and tighten them.

3. Fit the bottom deflector - high-level configuration.
   - a. Fit 10 bolts fixing the bottom deflector to the front subframe, and tighten them.
   - b. Fit 6 bolts fixing the bottom deflector to the front bumper, and tighten them.
   - c. Remove 5 screws and 1 bolt fixing the bottom deflector to the left and right wheelhouse liners, and tighten them.

Mirrors

Specifications

Torque

Description	Value
Nut-door mirror to front door	7–10Nm

Service Procedures

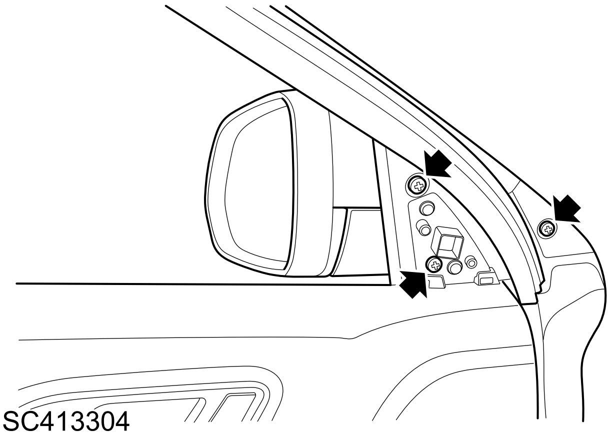
Exterior Mirror Assembly

Remove

1. Disconnect the battery negative.
2. Remove the interior trim panel and waterproof membrane from the driver door.

☞**Front Door Interior Trim Panel and Waterproof Membrane Refit**

3. Remove the interior quarter trim panel from the front door and uplift the front door sealing strip around this trim panel.
4. Disconnect the exterior mirror assembly harness connector.
5. Remove 3 bolts fixing the exterior mirror assembly onto the door, and remove the exterior mirror assembly.



Refit

1. Locate this assembly into the corresponding locating hole on the door in virtue of the locating pin on the exterior mirror assembly, and flap the clips. Install 3 bolts, tighten to **7–10Nm** and check the torque.
2. Connect the exterior mirror assembly harness connector.
3. Refit the interior quarter trim panel and sealing strip of front door.
4. Fit the interior trim panel and waterproof membrane of the driver door.

☞**Front Door Interior Trim Panel and Waterproof Membrane Refit**

5. Connect the battery negative.

Exterior Rearview Mirror Glass

Remove

1. Push the upper end of an exterior mirror a little hard to make it tilt.
2. Grasp the back of mirror, and separate the rearview mirror glass from the rearview mirror motor hard.
3. Uplift the back of rearview mirror and disconnect the electrical connector. Then remove the exterior mirror glass.

Refit

1. Connect the electrical connector.
2. Refit the exterior mirror glass and check whether it is refitted in place.

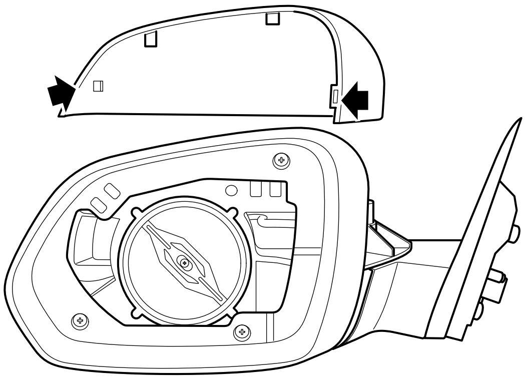
Exterior Mirror Cover

Remove

1. Remove the exterior mirror glass.

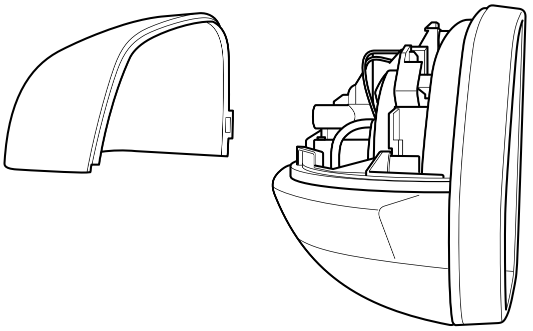
☞**Exterior Mirror Glass Remove**

2. Remove the clips fixing the cover onto the exterior mirror assembly.



SC413302

3. Remove the exterior mirror cover.



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Refit

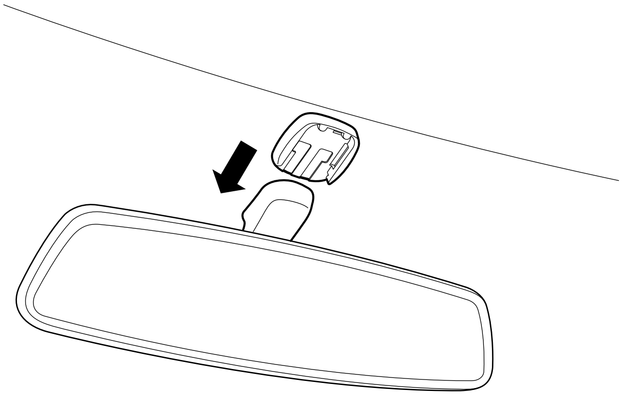
1. Locate the exterior mirror cover on the exterior mirror, and flap clips to place.
2. Refit the exterior mirror glass.

☞**Exterior Mirror Glass Refit**

Manual anti-dazzle Interior Rearview Mirror

Remove

1. Knock down the interior rearview mirror assembly with a rubber hammer to remove it from the base.



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Refit

1. Locate the interior rearview mirror onto the mounting bracket, and push it into the slot carefully to clamp it in place.

Roof

Specifications

Torque

Description	Value
Bolt - sunroof to vehicle roof	7–9Nm
screw - sunroof glass to bracket	4.5–5.5Nm
-	
Bolt-Top console to Roof	1.5–2Nm
stress-sunroof out seal to roof panel	60–70N

Service Procedures

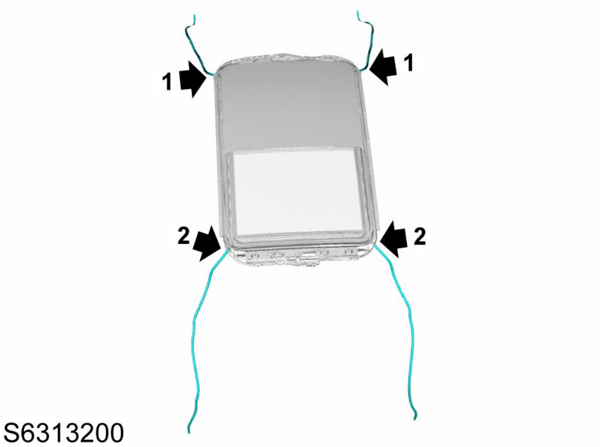
Sunroof Assembly-Linear Style Switch

Remove

1. Disconnect the battery negative terminal.
2. Remove the roof interior trim panel.

☞**Interior Roof Trim Panel (With Sunroof) Remove**

3. Disconnect 2 front drain pipes from sunroof assembly (1).
4. Disconnect 2 rear drain pipes from sunroof assembly (2).



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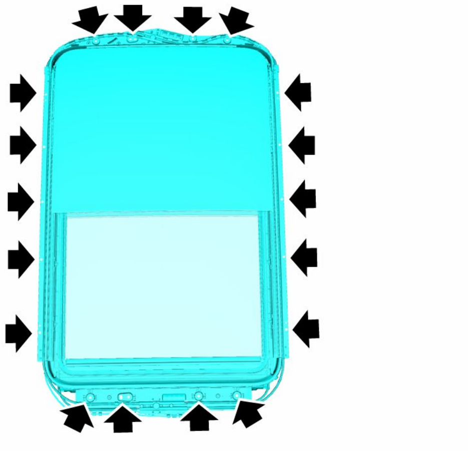
5. Disconnect the sunroof motor harness.
6. Remove 18 bolts fixing the sunroof assembly onto the body, with the assistance of a colleague, lower the roof assembly and remove via the loadspace aperture.



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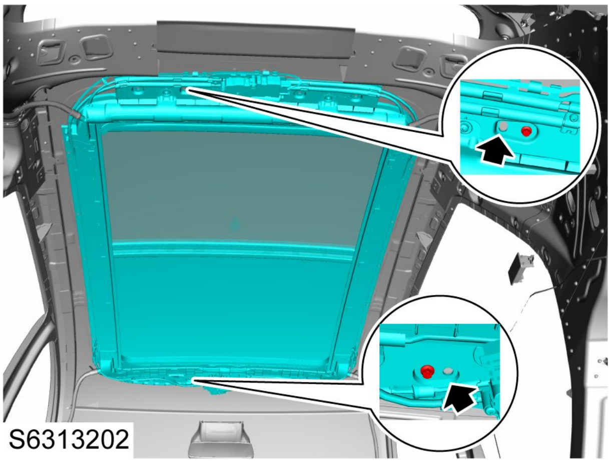
Refit

1. With assistance, locate the sunroof assembly on the body, and prefit 18 bolts.
2. Ensure that the front and rear locating holes of the sunroof are completely aligned with two locating holes in the body, tighten 18 bolts to **7–9Nm**, and check the torque.



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3. Connect the sunroof motor connector.
4. Connect the drain tube to the sunroof assembly.
5. Check and adjust the flushness of the sunroof glass according to the sunroof information.

☞**Sunroof Information**

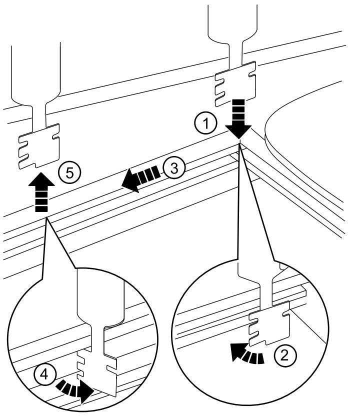
6. Connect the battery negative.
7. Perform a self-learning for the sunroof glass motor: Fully close the sunroof glass, slide the sunroof glass switch forward to the 2nd position and hold in position for 10 seconds. The sunroof will open a preset amount and stop, it will then close automatically. During the whole process, the switch must remain in the 2nd position.
8. Perform a self-learning for the sunroof sunshade motor: Fully close the sunshade, slide the sunshade switch forward to the 2nd position and hold in position for 10 seconds. The sunshade will open a preset amount and stop, it will then close automatically. During the whole process, the switch must remain in the 2nd position.
9. Operate the switch, and check the operation of the glass and sunroof sunshade.
10. Refit the interior roof trim panel.

☞**Interior Roof Trim Panel (Without Sunroof) Refit**

Grease Maintenance

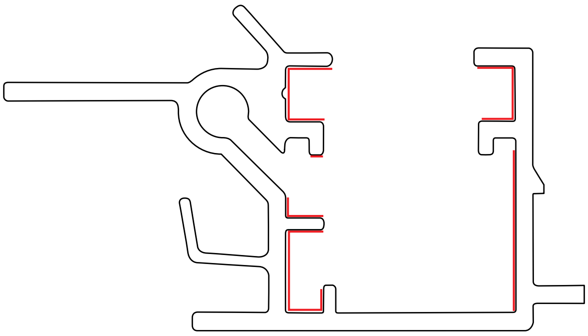
1. Clean any dust and dirt from the sunroof glass panels and the exposed sunroof surface as well as any foreign materials from the glass run channel where the mechanical structure runs and the glass panel edges.
2. Remove the front and rear sunroof glass panels and place them properly.
3. Ensure there is no deformation inside the glass run channel groove and no damage or scratches on the surface coating.
4. Operate the sunroof to close, i.e., operate the mechanical assembly of the sunroof to the front of the glass run channel. Put the special tool **TBO00061** into the front

of glass run channel (1), rotate it for 90° (2), then push the tool (3) toward the rear of guide rail, rotate it for 90° (4) to clean out the foreign material and grease (5). Clean the removed foreign material and grease from the tool. Repeat the operation for over three times until less foreign material and grease can be wiped off.



S6313163

5. Completely open the sunroof, i.e., operate the mechanical assembly of the sunroof to the rear of the glass run channel, and remove foreign material and grease from the front of glass run channel according to step 4: Insert the tool ® Rotate the tool through 90° ® Push the tool along the glass run channel ® Rotate the tool through 90° ® Remove the foreign material and grease. Clean the removed foreign material and grease from the tool. Repeat the operation for over three times until less foreign material and grease can be wiped off.
6. Apply the after-sales special grease to the channel (sectional view of channel is shown) where the mechanical structure runs when the sunroof is opened and closed. Make sure the grease is applied evenly at the red line below. The special grease should be applied at a constant speed and shape a uniform thickness with visible oily reflection of light and without large caking.



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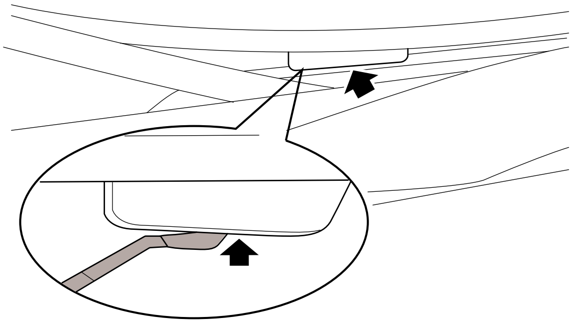
7. Apply grease to the blocks at two corners of front glass panel to prevent false triggering of anti-pinch function due to increased friction between glass panel and wind-proof net during closing of front glass panel.



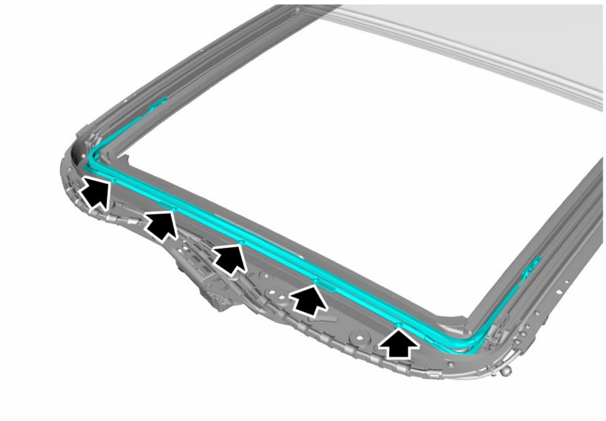
S6313164

8. Fit the glass panel to the sunroof assembly. Sunroof glass initialisation: fully close the sunroof glass, slide the sunroof glass switch forward to the 2nd position and hold in position for 10 seconds. The sunroof will open a preset amount and stop, it will then close automatically. During the whole process, the switch must remain in the 2nd position.
9. Open and close the front sunroof glass panel at least 10 times to confirm if it works normally.

Sunroof Deflector Assembly-Linear Style Switch

Remove

1. Fully open the sunroof by sliding.
2. Remove 5 screws fixing the sunroof deflector onto the sunroof.



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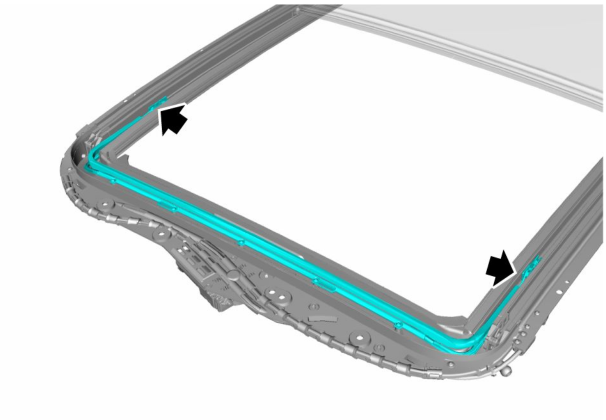
3. Loosen the both retain clips of sunroof deflector and remove the sunroof deflector.



S6313210

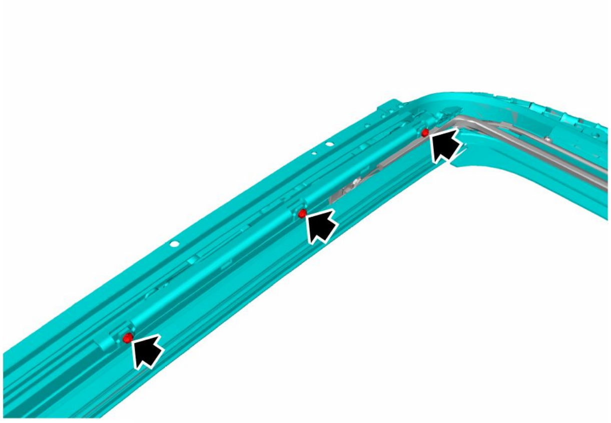
Refit

1. Refit the sunroof deflector and fix it with clips.
2. Fix the sunroof deflector onto the sunroof, fit 5 screws and tighten up.
3. Close the sunroof glass.

Front Sunroof Glass Panel-Linear Style Switch

Remove

1. Open the sunroof sunshade.
2. Fully tilt the sunroof glass to the open position.
3. Remove the both sunroof seals on the sunroof frame.
4. Remove the bolts fixing the front sunroof glass panel onto the bracket (6 bolts on both sides in total).



S6313203

5. Remove the front sunroof glass panel assembly. Do not manually move both brackets refitting the glass panel.

Refit

1. Locate the front sunroof glass panel to the bracket, prefit 6 screws.
2. Adjust the front sunroof glass panel to align to the roof panel metal aperture, according to the sunroof information, tighten the screws to **4.5–5.5Nm**, and check the torque.

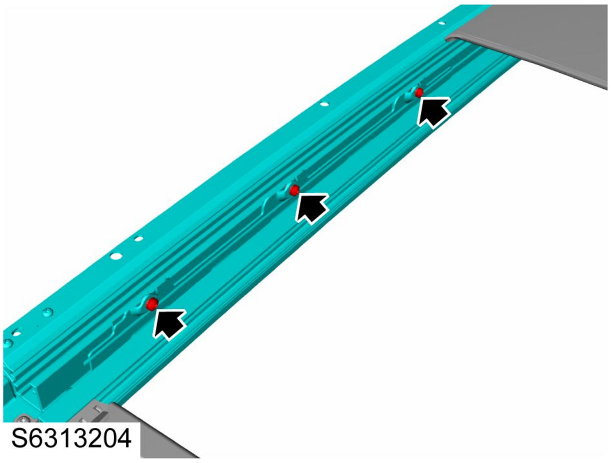
☞**Sunroof Information**

3. Refit the sunroof seals.
4. Perform a self-learning for the sunroof glass motor: Fully close the sunroof glass, slide the sunroof glass switch forward to the 2nd position and hold in position for 10 seconds. The sunroof will open a preset amount and stop, it will then close automatically. During the whole process, the switch must remain in the 2nd position.
5. Operate the front sunroof glass panel to check for the mounting.
6. Close the sunroof sunshade.

Rear Sunroof Glass Panel-Linear Style Switch

Remove

1. Open the sunroof sunshade.
2. Fully tilt the front sunroof glass to the open position.
3. Remove the both sunroof seals on the sunroof frame.
4. Remove the bolt fixing the rear sunroof glass panel to the bracket (6 bolts on both sides in total).



S6313204

5. Pull the rear sunroof glass plate the front of the vehicle for a certain distance, and then take out the rear sunroof glass upward and remove it.

Refit

1. Locate the rear sunroof glass panel to the bracket, prefit 6 screws.
2. Adjust the rear sunroof glass panel according to the sunroof information, tighten the screws to **4.5–5.5Nm**, and check the torque.

☞**Sunroof Information**

3. Refit the sunroof seals.
4. Close the sunroof glass and sunshade.

Sunroof Sunshade-Linear Style Switch

Remove

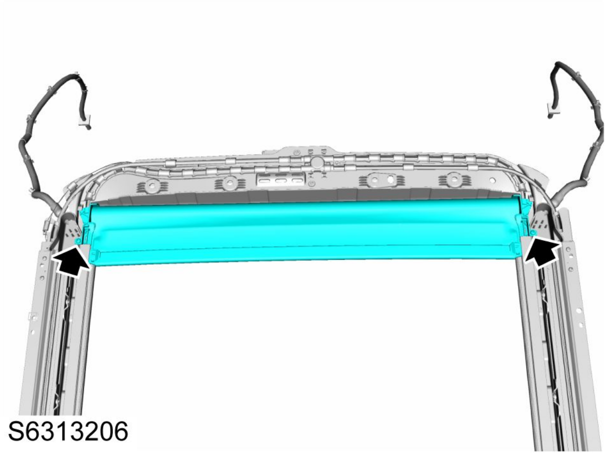
1. Fully open the sunroof glass and sunshade.
2. Slide the sunroof glass switch backward to the 2nd position and hold in position for 10 seconds, the sunshade will run to service position.
3. Remove the roof interior trim panel.

☞**Interior Roof Trim Panel (With Sunroof) Remove**

4. Remove the rear sunroof glass panel.

☞**Rear Sunroof Glass Panel-New State Remove**

5. Remove 2 bolts fixing the sunshade assembly onto the sunroof frame.



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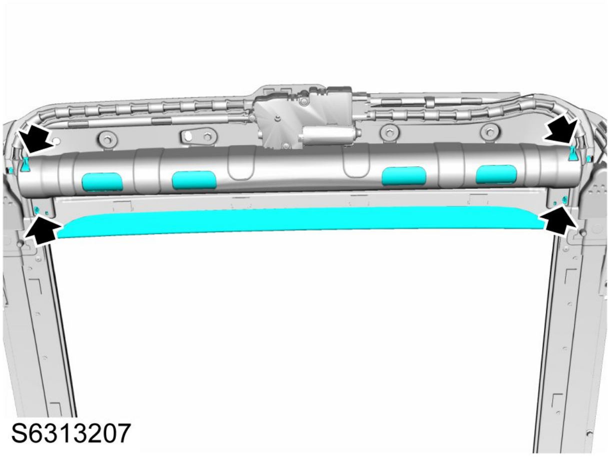
6. Pry the clips at the bottom of the sunshade.



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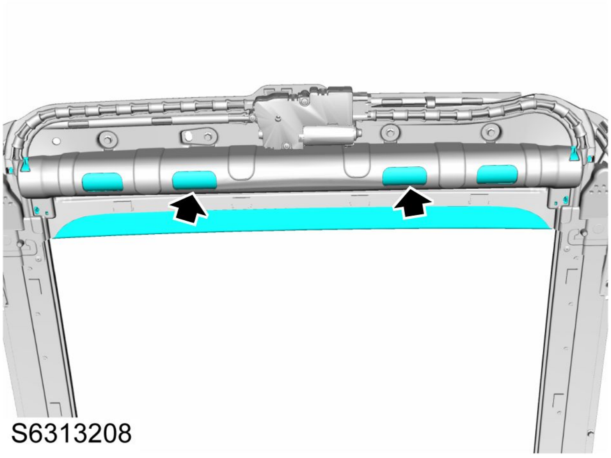
7. Gently push the sunshade through the hole in the frame by hand and remove the sunshade from the frame.



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Remove

1. Position one side of the sunroof sunshade to the frame, and then position the other side to the corresponding position. Press both sides of the sunshade to make sure that a clear "click" sound is heard to ensure that the clips are installed in place
2. After locate the sunroof sunshade on the sunroof frame, fit 2 bolts, tighten up.
3. Connect the battery negative.
4. Perform a self-learning for the sunroof sunshade motor: Fully close the sunshade, slide the sunshade switch forward to the 2nd position and hold in position for 10 seconds. The sunshade will open a preset amount and stop, it will then close automatically. During the whole process, the switch must remain in the 2nd position.
5. Operate the switch, and check the operation of the gsunroof sunshade.
6. Refit the rear sunroof glass panel.

☞**Rear Sunroof Glass Panel–New State Refit**

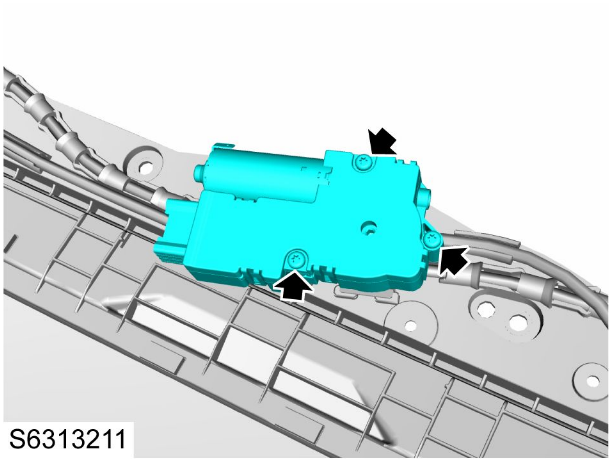
7. Refit the interior roof trim panel.

☞**Interior Roof Trim Panel (Without Sunroof) Refit**

Sunroof Glass Panel Motor-Linear Style Switch

Remove

1. Disconnect the battery negative.
2. For vehicles with front passenger air bag switch, pry off the clip with tools and remove the roof console assembly.
3. For vehicles without front passenger air bag switch, open glass box, remove 2 screws fixing the roof console assembly to the roof, pry off the clip with tools and remove the roof console assembly.
4. Disconnect the sunroof glass panel motor connector.
5. Remove 3 screws fixing the sunroof glass panel motor onto the sunroof assembly.



S6313211

6. Remove the sunroof glass panel motor.

Refit

1. Locate the sunroof motor, and engage the motor drive gear into the sunroof cable.
2. Fix the sunroof glass panel motor to the sunroof, fit 3 screws, tighten to and check the torque.
3. Connect the connector of the sunroof glass panel motor.
4. For vehicles without front passenger air bag switch, fix the roof console assembly to the roof trim panel, fit 2 screws, tighten to**1.5–2Nm** and check the torque.
5. For vehicles with front passenger air bag switch, fix the roof console assembly to the roof trim panel.
6. Connect the battery negative.
7. Perform a self-learning for the sunroof glass motor: Fully close the sunroof glass, slide the sunroof glass switch forward to the 2nd position and hold in position for 10 seconds. The sunroof will open a preset amount and stop, it will then close automatically. During the whole process, the switch must remain in the 2nd position.
8. Operate the front sunroof glass panel to check for the mounting.

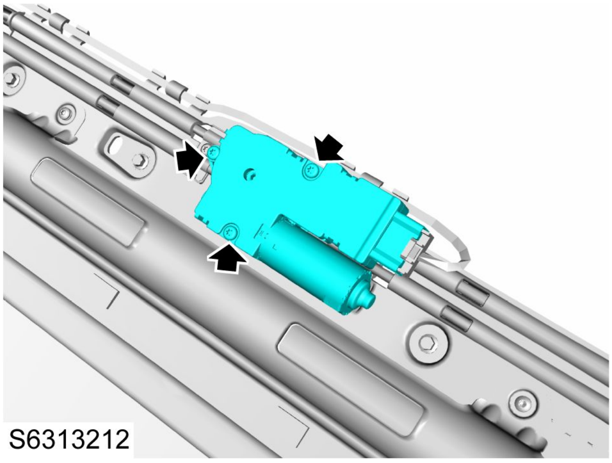
Sunroof Sunshade Motor-Linear Style Switch

Remove

1. Disconnect the battery negative.
2. Remove the roof interior trim panel.

☞**Interior Roof Trim Panel (With Sunroof) Remove**

3. Disconnect the sunroof sunshade motor connector.
4. Remove 3 screws securing the sunroof sunshade motor onto the sunroof.



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5. Remove the sunroof sunshade motor.

Refit

1. Locate the sunroof sunshade motor, and engage the motor drive gear in the sunroof sunshade cable.
2. Fix the sunroof sunshade motor to the sunroof, fit 3 screws, tighten to and check the torque.
3. Connect the sunroof sunshade motor connector.
4. Connect the battery negative.
5. Perform a self-learning for the sunroof sunshade motor: Fully close the sunshade, slide the sunshade switch forward to the 2nd position and hold in position for 10 seconds. The sunshade will open a preset amount and stop, it will then close automatically. During the whole process, the switch must remain in the 2nd position.
6. Operate the switch, and check the operation of the sunroof sunshade.
7. Refit the interior roof trim panel.

☞**Interior Roof Trim Panel (Without Sunroof) Refit**

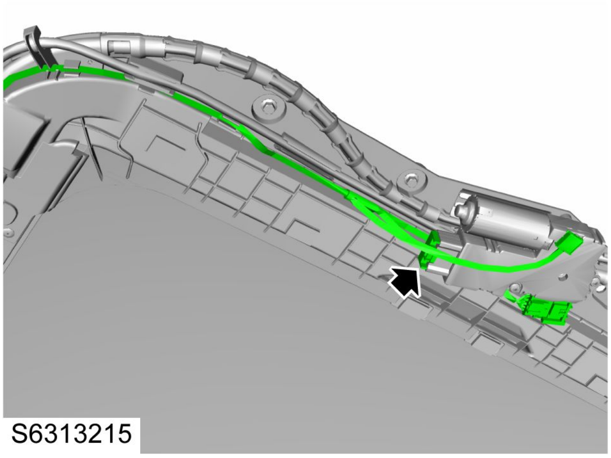
Sunroof Harness-Linear Style Switch

Remove

1. Disconnect the battery negative.
2. Remove the roof interior trim panel.

☞**Interior Roof Trim Panel (With Sunroof) Remove**

3. Disconnect the sunroof harness and the roof harness.
4. Disconnect the sunroof switch connector.
5. Disconnect the sunroof glass panel motor connector.



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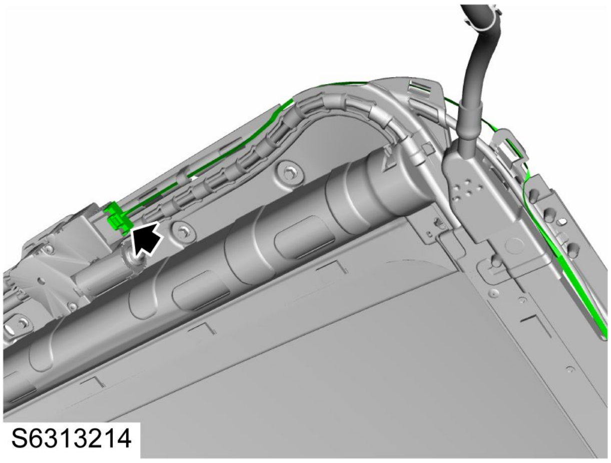
6. Disconnect the sunroof sunshade motor connector.



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7. Remove the clip fixing the sunroof harness to the sunroof, and take away the sunroof harness.

Refit

1. Fix the sunroof harness onto the sunroof and tighten with clip.
2. Connect the sunroof sunshade motor connector.
3. Connect the sunroof glass panel motor connector.
4. Connect the sunroof switch connector.
5. Connect the sunroof harness and the roof harness.
6. Connect the battery negative.
7. Perform a self-learning for the sunroof glass motor: Fully close the sunroof glass, slide the sunroof glass switch forward to the 2nd position and hold in position for 10 seconds. The sunroof will open a preset amount and stop, it will then close automatically. During the

whole process, the switch must remain in the 2nd position.

8. Perform a self-learning for the sunroof sunshade motor: Fully close the sunshade, slide the sunshade switch forward to the 2nd position and hold in position for 10 seconds. The sunshade will open a preset amount and stop, it will then close automatically. During the whole process, the switch must remain in the 2nd position.
9. Operate the switch, and check the operation of the glass and sunroof sunshade.
10. Refit the interior roof trim panel.

Interior Roof Trim Panel (Without Sunroof) Refit

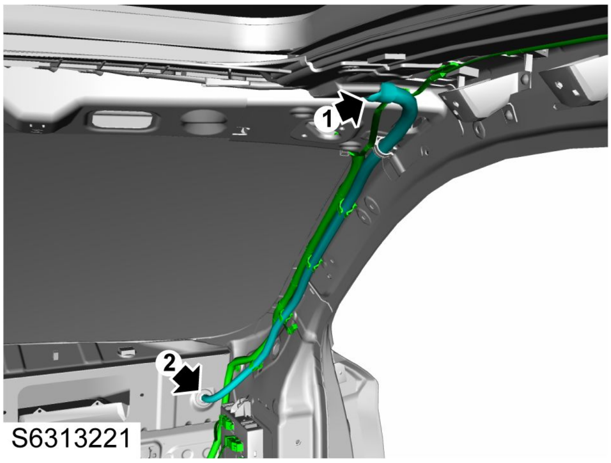
Front Sunroof Drain Pipe

Remove

1. Fold the seat back, lower the roof trim panel from the roof to a position low enough.

Roof Trim Panel Assembly - Sedan - Sunroof Remove

2. Disconnect the front sunroof drain pipe from the sunroof drain casing pipe (1).
3. Disconnect the front sunroof drain pipe end to the drain pipe sleeve of the windscreen beam (2), and pull out the drain pipe.



4. Disconnect the clip connecting the front sunroof drain pipe to the A pillar.
5. Remove the front sunroof drain pipe.

Refit

1. Locate the front sunroof drain pipe to the A pillar, and secure them with clips.
2. Connect the front sunroof drain pipe end to the drain pipe sleeve of the windscreen beam.
3. Connect the front sunroof drain pipe to the sunroof drain casing pipe.
4. Fit the roof trim panel assembly.

Roof Trim Panel Assembly - Sedan - Sunroof Refit

Rear Sunroof Drain Pipe

Remove

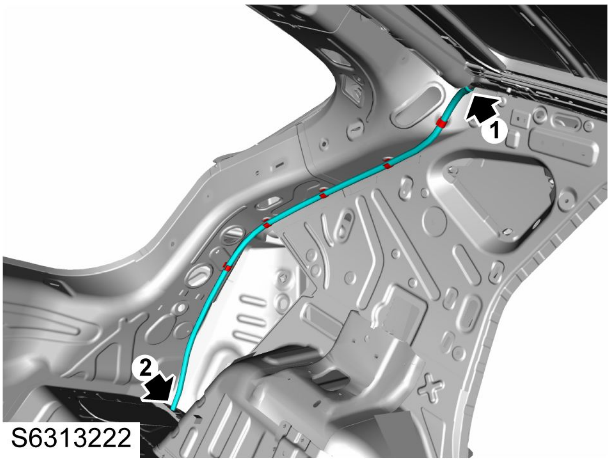
1. Open the trunk.
2. Fold the seat back, perform steps 3 to 12 in the "Roof Trim Panel Assembly Remove" procedure. Lower the roof trim panel from the roof to a position low enough.

Roof Trim Panel Assembly - Sedan - Sunroof Remove

3. Remove the trunk side trim panel assembly.

Trunk Sill Trim Panel Remove

4. Disconnect the rear sunroof drain pipe from the sunroof drain casing pipe (1).
5. Disconnect the rear sunroof drain pipe from the drain pipe sleeve behind the bodyside outer panel (2).



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6. Disconnect the clip connecting rear sunroof drain pipe to the roof rail, D pillar and inner trunk.
7. Remove the rear sunroof drain pipe.

Refit

1. Locate the rear sunroof drain pipe to the roof rail, D pillar and inner trunk, and secure them with clips.
2. Connect the rear sunroof drain pipe to the drain pipe sleeve behind the bodyside outer panel.
3. Connect the rear sunroof drain pipe to the sunroof drain casing pipe.
4. Fit the trunk side trim panel assembly.

Trunk Sill Trim Panel Refit

5. Fit the roof trim panel assembly.

Roof Trim Panel Assembly - Sedan - Sunroof Refit

6. Close the trunk.

Panoramic Sunroof Outer Weatherstrip

Remove

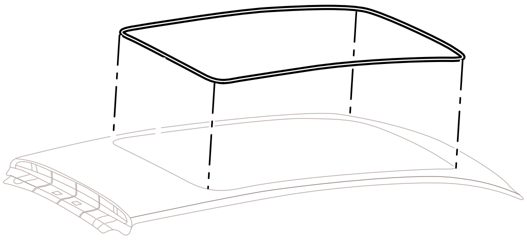
1. Remove the front sunroof glass panel.

Front Sunroof Glass Panel Remove

2. Remove the rear sunroof glass panel.

Rear Sunroof Glass Panel Remove

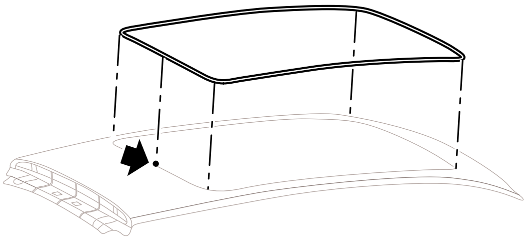
3. Peel off the sunroof outer weatherstrip from the roof, and remove the weatherstrip.



SC113961

Refit

1. The sheet metal surface of the frame to which the weatherstrip is to be attached is required to be oil-free, wax-free, water-free and dust-free, with a clean surface. Use a lint-free wiping cloth to dip in alcohol or isopropanol: water ≥50:50 alcohol or isopropanol to clean the sheet metal.
2. After any solvent has completely evaporated, align the seam of the new sunroof weatherstrip with the middle position of the sheet metal seam allowance on the rear of the top cover, peel off the backing paper near the seam, and stick the weatherstrip on the sheet metal for preliminary positioning (it requires the temperature of weatherstrip, sheet metal mounting surface ≥ 16 ℃).

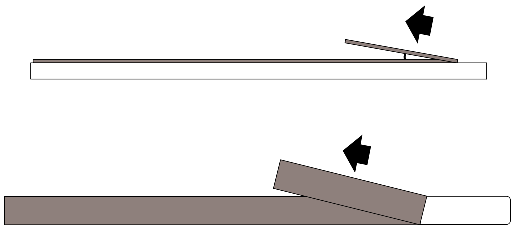


SC113960

3. Clamp the weatherstrip to the edge of the sheet metal seam allowance in turn to pre-position the entire circle, where the last quarter of the length is even on the

longer straight side (please note that the weatherstrip should not be stretched during this process).

4. Whilst maintaining a small angle, tear off the tape backing paper from the outer sunroof weatherstrip (slow the tearing speed at corners).



SC113963

5. Useing skylight seal contact roller**TBO00060** to completely roll along the same direction for 3 circles, (Apply a firm force of **60–70N**; ensure that the weatherstrip is installed and bonded in place (the direction of force must be perpendicular to the weatherstrip installation surface).

6. After the assembly, make sure that the sunroof weatherstrip is flush with the smooth surface of the roof, not higher than the smooth surface of the roof, and there is no gap at the middle joint point at the rear of the roof, and no wrinkles at corners.
7. Install the rear glass panels of the sunroof.

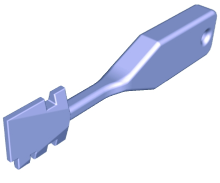
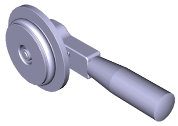
Rear Sunroof Glass Panel Refit

8. Refit the front sunroof glass panel.

Front Sunroof Glass Panel Refit

9. After the sunroof installation, ensure that the sunroof seal and the sunroof are properly matched, and there is no extrusion deformation. The weatherstrip is installed tightly and uniformly without distortion.

Special Tools

Tool Number	Description	Picture
TBO00061	Grease removal tool	 TBO00061
TBO00060	Skylight seal contact roller	 TBO00060

Wipers and Washer

Specifications

Torque

Description	Value
Nut-Front wiper arm to linkage spindle	28–32Nm
Bolt-Linkage spindle to body	7–10Nm
screw - from wipe motor to linkage spindle	28–32Nm
Bolt-Windshield washer to body	4–6Nm
Bolt-The washer bottle filler neck to right headlamp bracket	4–6Nm
Nut-Rear wiper arm to motor shaft	8–10Nm
Nut and Bolt-Rear wiper motor to tailgate	7–10Nm

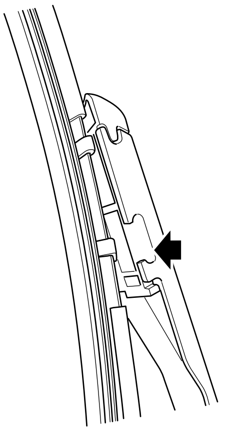
Service Procedures

Wiper Blade Assembly

Remove

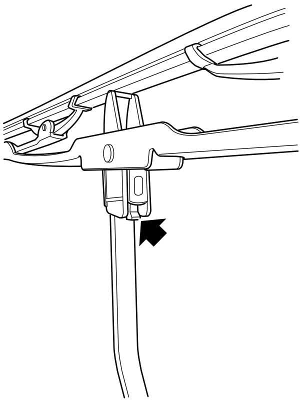
Caution: When changing wiper blades it is essential that the wiper mechanism is placed in the service position and that the wiper arms are raised away from the windscreen. Ensure the arms are always held during any activity so as to avoid 'dropping' onto the windscreen and possibly causing damage such as cracking.

1. With the bonnet closed, and within 20 seconds of switching the START/STOP Switch to the OFF position, press the wiper stalk switch to the single wipe position and release it; the wiper will automatically move to the service position and stop at a mid-point the windscreen.
2. Lift the wiper arm away from the windscreen.
3. For the boneless wiper, press the retaining clip at both sides while pulling the wiper blade outward, to remove the wiper blade from the wiper arm.



S6814017

4. For the bone wiper, rotate the wiper blade and press the middle retaining clip , meanwhile pull the wiper blade downward, to remove the wiper blade from the wiper arm.



S6814018

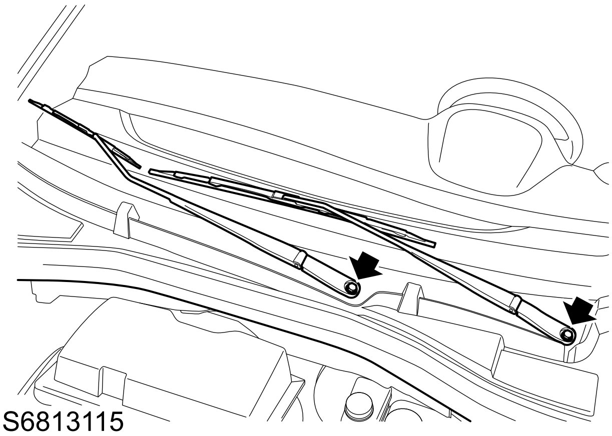
Refit

1. Slide the blade onto the wiper until the fixing clamp is engaged. Refit the blade.
2. Put the wiper assembly back onto the windscreen, and check whether the wiper blade is fixed correctly onto the wiper arm.
3. Depress the wiper stalk switch to the single wipe position and release it or turn the ignition switch from position OFF to position ACC or ON/RUN/START, and the wiper will exit the service mode and automatically go back to the original position.

Window Wiper Arm

Remove

1. Remove the mounting shaft cover of the wiper arm.
2. Remove 2 nuts fixing the wiper arm to the linkage.



S6813115

3. Remove the arm assembly from the linkage mechanism.

Refit

1. Fit the wiper arm onto the linkage mechanism.
2. Fit the nuts onto the shaft of linkage mechanism, tighten to **28–32Nm**, and check the torque.
3. Refit the shaft cover of the wiper arm.

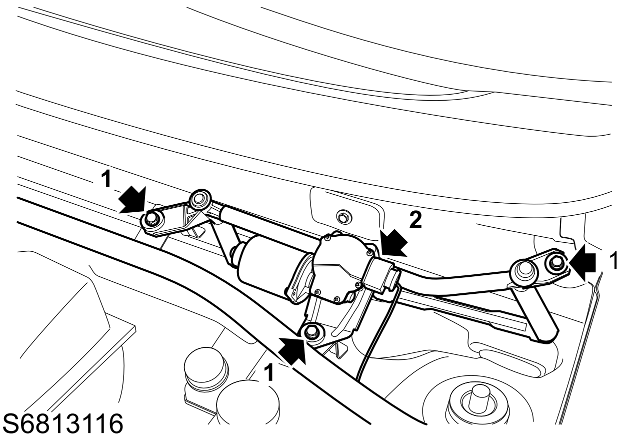
Window Wiper Linkage Assembly

Remove

1. Disconnect the battery negative.
2. Remove the A/C air intake grille assembly.

☞ **A/C Air Intake Grille Assembly Remove**

3. Remove 3 bolts (1) fixing the linkage mechanism onto the body.
4. Disconnect the window wiper motor connector (2).



S6813116

5. Remove the wiper linkage assembly.

Refit

1. Connect the window wiper motor connector.
2. Refit the windscreen wiper linkage assembly, fit 3 screws and tighten to **7–10Nm**, and check the torque.
3. Fit the A/C air intake grille assembly.

☞ **A/C Air Intake Grille Assembly Refit**

4. Connect the battery negative.

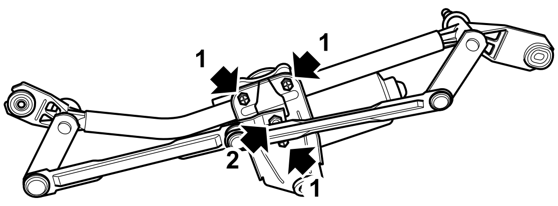
Window Wiper Motor

Remove

1. Disconnect the battery negative.
2. Remove the wiper linkage assembly.

Wiper Linkage Assembly Remove

3. Remove 3 bolts (1) and 1 nut (2) securing motor onto the linkage mechanism.



S6813117

4. Remove the windshield wiper motor.

Refit

1. Fix the windshield wiper motor onto the linkage mechanism, fit 3 bolts and 1 nut, tighten to **28–32Nm**, and check the torque.
2. Window Wiper Linkage Assembly Refit

Window Wiper Linkage Assembly Refit

3. Connect the battery negative.

Window Washer Reservoir Assembly

Remove

1. Disconnect the battery negative.
2. Remove the window washer reservoir assembly.

Window Washer Pump Assembly Remove

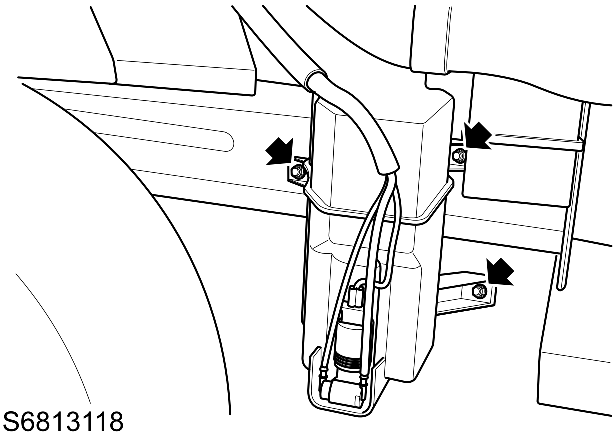
3. Remove the right front wheelhouse liner.

Front Wheelhouse Liner Refit

4. Remove the window washer reservoir filler pipe assembly.

Window Washer Reservoir Filler Pipe Assembly Remove

5. Remove 3 bolts fixing the washer reservoir to the body.



S6813118

6. Remove the washer reservoir.

Refit

1. Fit 3 bolts fixing the washer reservoir to the body, tighten to **4–6Nm**, and check the torque.
2. Refit window washing reservoir filler pipe assembly.

Window Washer Reservoir Filler Pipe Assembly Refit

3. Refit the window washer pump assembly.

Window Washer Pump Assembly Refit

4. Fit the right front wheelhouse liner.

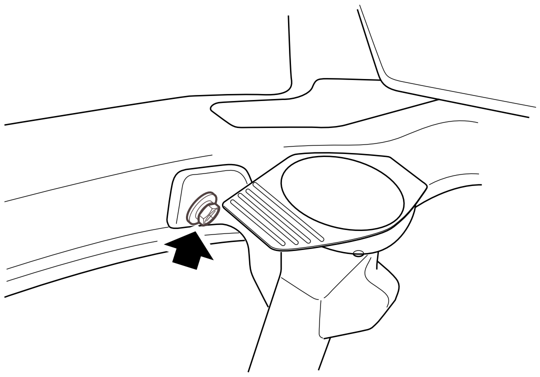
Front Wheelhouse Liner Refit

5. Connect the battery negative.

Window Washing Reservoir Filler Pipe Assembly

Remove

1. Remove 1 bolt securing the washer reservoir nozzle onto the right headlamp bracket.



S6810003

2. Remove the washer reservoir nozzle and discard the seal ring.

Refit

1. Fit the new seal ring to the washer reservoir nozzle.
2. Fit the washer reservoir nozzle onto the washer reservoir.
3. Refit 1 bolt securing the washer reservoir nozzle onto the right headlamp bracket, and tighten to **4–6Nm**, and check the torque.

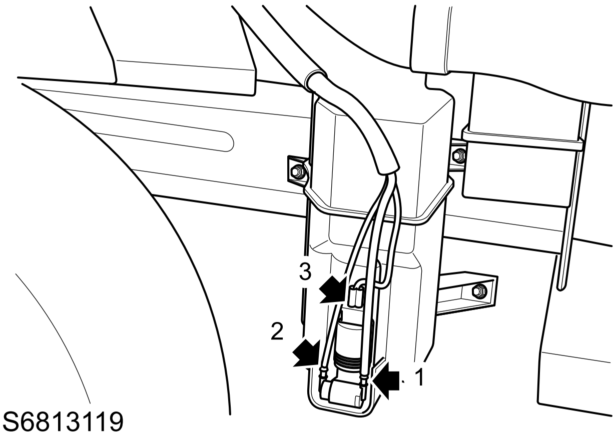
Window Washer Pump Assembly

Remove

1. Disconnect the battery negative.
2. Remove the front bumper.

☞**Front Bumper Refit**

3. Disconnect the washer pump connector (3).
4. Put one container under the washer reservoir.
5. Remove the washer pump from the washer reservoir.
6. Disconnect the rear window washer pump hose (2).
7. Disconnect the windshield washer pump hose (1), and take away the washer pump.



S6813119

Refit

1. Fit the washer pump onto the washer reservoir.
2. Connect the windshield washer pump hose.
3. Connect the rear window washer pump hose.
4. Connect the washer pump connector.
5. Refill windscreen washer fluid.
6. Fit the front bumper.

☞**Front Bumper Refit**

7. Connect the battery negative.

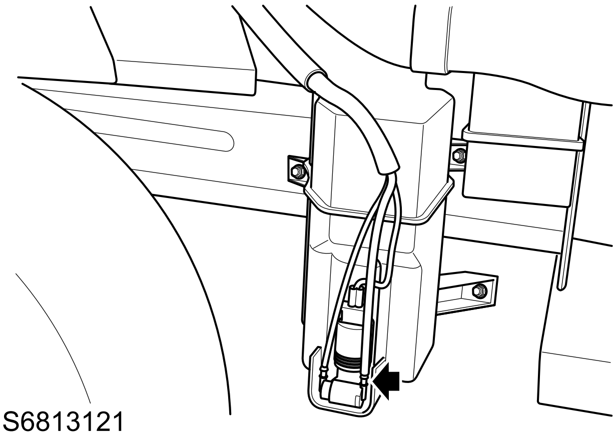
Windshield Washer Pump Hose

Remove

1. Remove the front bumper.

☞**Front Bumper Refit**

2. Put one container under the washer pump.
3. Disconnect the windshield washer pump hose with the washer pump.



S6813121

4. Remove the A/C air intake grille assembly.

☞**A/C Air Intake Grille Assembly Remove**

5. Disconnect the windshield washer pump hose with the windshield nozzle hose.
6. Remove the windshield washer pump hose.

Refit

1. Refit the new hose and connect it to the washer pump.
2. Route the new hose according to the used one and twine it with strips.
3. Connect the windshield washer pump hose and the nozzle hose.
4. Fit the A/C air intake grille assembly.

☞**A/C Air Intake Grille Assembly Refit**

5. Refill windscreen washer fluid.
6. Fit the front bumper.

☞**Front Bumper Refit**

Rear Windscreen Wiper Arm Assembly

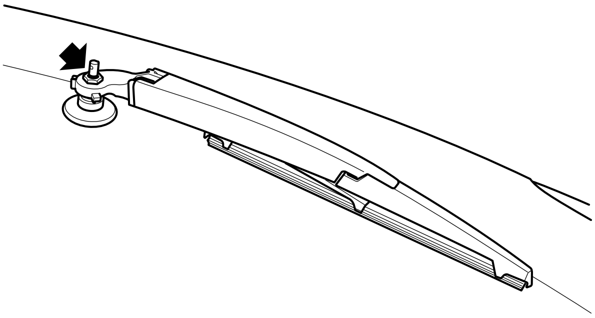
Remove

Caution: Remove the nozzle to use the special tool, otherwise the nozzle will be damaged.

1. Remove the rear windscreen washer nozzle.

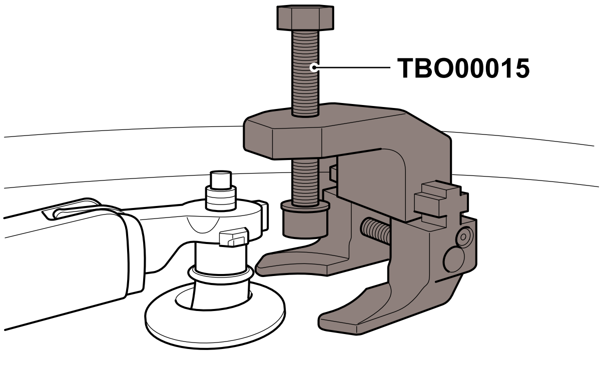
☞**Rear Windscreen Washer Nozzle Remove**

2. Remove 1 nut fixing the rear windscreen wiper arm assembly to the rear wiper motor shaft.



S6813122

3. Remove the rear windscreen wiper arm assembly with special tool **TBO00015**.



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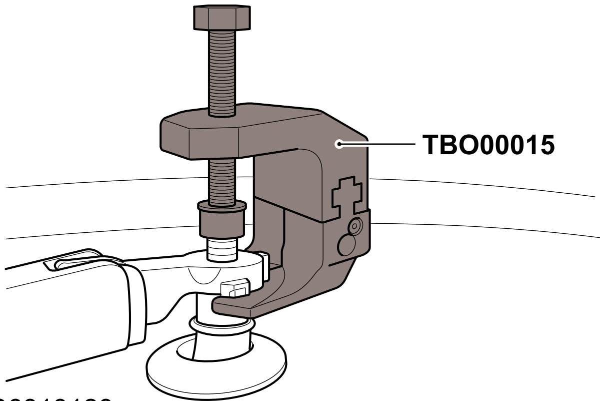


S6813128

Refit

1. Fix the rear windscreen wiper arm to the wiper motor

shaft, fit 1 nut, tighten it to **8–10Nm**, and check the torque.

2. Fit the rear windscreen washer nozzle.

☞**Rear Windscreen Washer Nozzle Refit**

3. Ensure that the adhesive tape of the wiper blade is fitted in its initial position properly and aligned with the locating dot of the wiper on the glass.

Rear Windscreen Wiper Motor

Remove

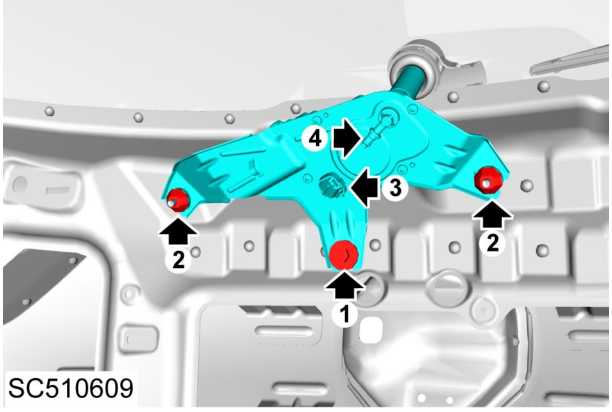
1. Disconnect the negative battery cable.
2. Remove the rear windscreen wiper arm assembly.

☞**Rear Windscreen Wiper Arm Assembly Removal**

3. Remove the seal ring of rear wiper motor from the wiper motor output shaft.
4. Remove the tail gate interior trim panel.

☞**Tail Gate Interior Trim Panel Remove**

5. Disconnect the harness connector (3) of the rear wiper motor.
6. Remove 2 nuts (2) and 1 bolt (1) fixing the rear windscreen wiper motor assembly to the tail gate.
7. Disconnect the rear windscreen washer pump hose from the rear window washer nozzle.



8. Remove the rear windscreen wiper motor assembly.

Refit

1. Connect the rear windscreen washer pump hose to the rear window washer nozzle.
2. Fit 2 nuts and 1 bolt fixing the rear wiper motor to the tail gate, tighten them to **7–10Nm**, and check the torque.
3. Connect the harness connector of the rear wiper motor.
4. Fit the tail gate interior trim panel.

☞**Tail Gate Interior Trim Panel Refit**

5. Fit the rear wiper motor seal ring.
6. Fit the rear windscreen wiper arm assembly.

☞**Rear Windscreen Wiper Arm Assembly Refit**

7. Connect the negative battery cable.

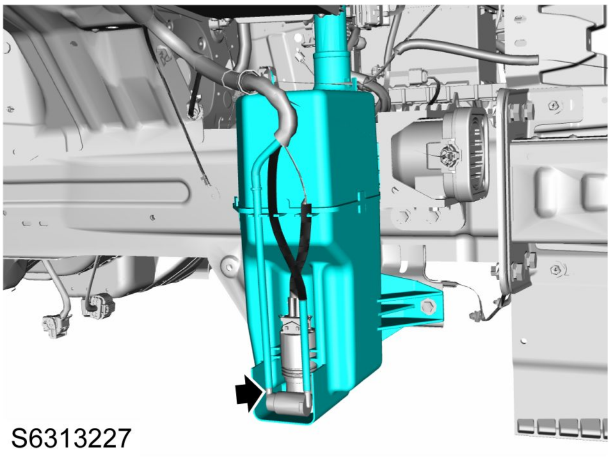
Rear Washer Pipe

Remove

1. Disconnect the negative battery cable.
2. Remove the front bumper.

☞**Front Bumper Refit**

3. Put a container under the washer pump.
4. Disconnect the hose from the rear window washer pump.



5. Remove the right A pillar lower trim panel.

☞**A Pillar Lower Trim Panel Refit**

6. Remove the right door sill trim panel assembly.

☞**Door Sill Trim Panel Assembly Refit**

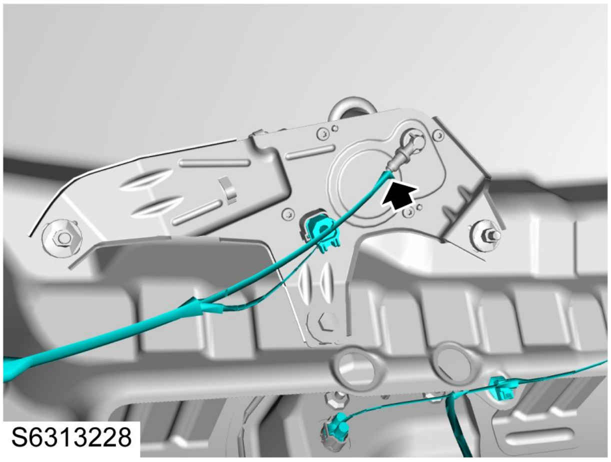
7. Remove the right trunk side trim panel.

☞**Trunk Sill Trim Panel Refit**

8. Remove the tail gate interior trim panel.

☞**Tail Gate Interior Trim Panel Remove**

9. Disconnect the rear washer pipe from the rear wiper motor.



10. Remove the rear washer pipe.

Refit

1. Fit a new water pipe to connect to the washer pump.
2. Route the new hose according to the used one and twine it with straps.
3. Connect the rear washer pipe to the rear window motor.
4. Refill the windscreen washer fluid.
5. Fit the front bumper.

☞**Front Bumper Refit**

6. Fit the right A pillar lower trim panel.

☞**A Pillar Lower Trim Panel Refit**

7. Fit the right door sill trim panel assembly.

☞**Door Sill Trim Panel Assembly Refit**

8. Fit the right trunk side trim panel.

☞**Trunk Sill Trim Panel Refit**

9. Fit the tail gate interior trim panel.

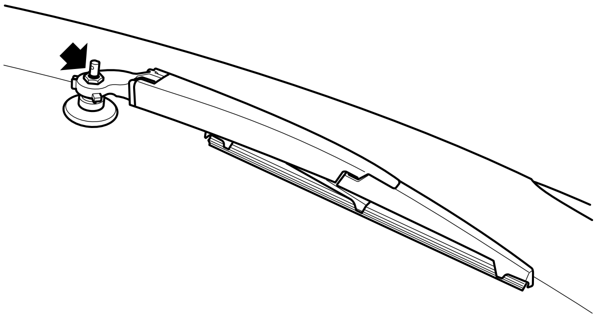
☞**Tail Gate Interior Trim Panel Remove**

10. Connect the negative battery cable.

Rear Windscreen Washer Nozzle

Remove

1. Remove the shaft cover of the rear wiper arm.
2. Lightly clamp the upper part of the nozzle with a proper tool and remove the nozzle.



S6813122

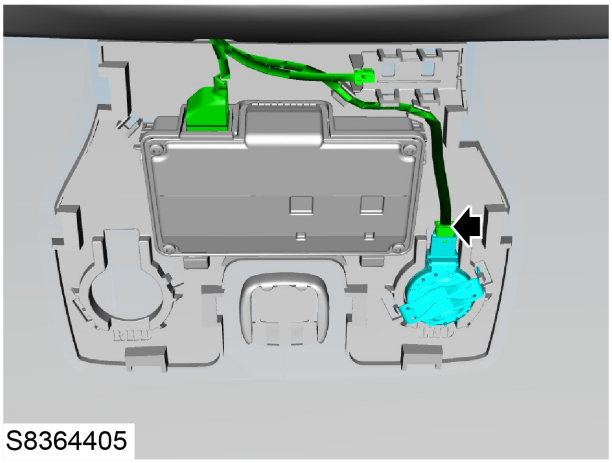
Refit

1. Insert the nozzle into the wiper motor shaft in the correct direction and tap to ensure that the nozzle is fitted in place and check if the washer fluid will inject in the correct direction. If adjustment is required, insert a needle into the nozzle and gently lever to adjust it so that the washer fluid can be directly injected to the center of the rear window.
2. Fit the shaft cover of the rear wiper arm.

Rain Sensor

Remove

1. Disconnect the negative battery cable.
2. Pry open the rain sensor cover.
3. Disconnect the rain sensor harness connector.



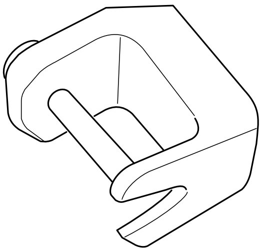
S8364405

4. Remove the rain sensor from the interior rearview mirror base.

Refit

1. Clean off any residual adhesive from the joint face between the windshield and the rain sensor.
2. Fit and secure the rain sensor onto the interior rearview mirror base with the clip.
3. Connect the harness connector of the rain sensor.
4. Fit the assembled rain sensor cover onto the interior rearview mirror base with the clip.
5. Connect the negative battery cable.

Special Tools

Tool Number	Description	Picture
TBO00015	Remover rear wiper arm	 TB000015

Lighting

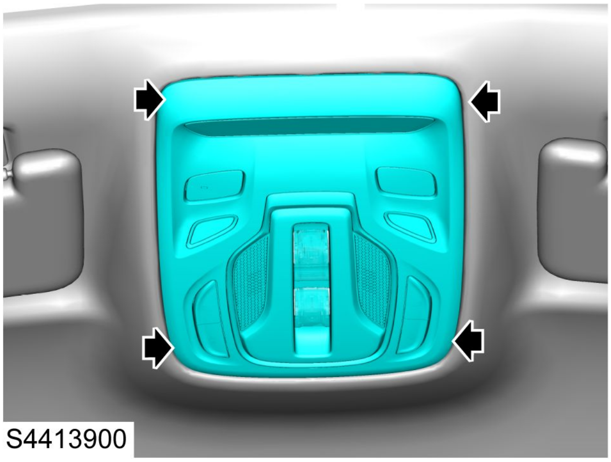
Service Procedures

Roof Console Assembly

Remove

Front Reading Lamp Assembly - with Sunroof Switch

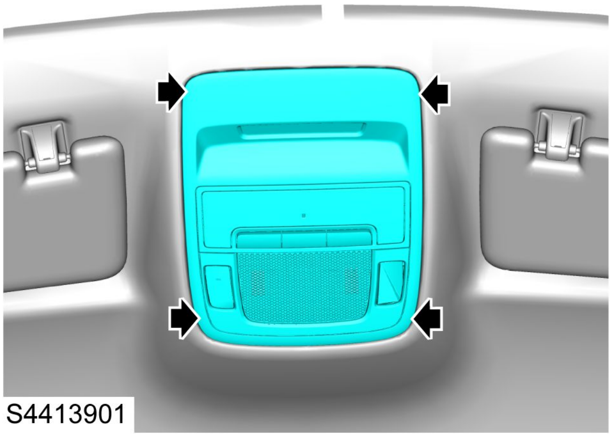
1. Disconnect the negative battery cable.
2. Pry off the clip and remove the roof console.



3. Disconnect the harness from the roof console.

Front Reading Lamp Assembly - without Sunroof Switch

1. Disconnect the negative battery cable.
2. Pry off the clip and remove the roof console.



3. Disconnect the harness from the roof console.

Refit

Front Reading Lamp Assembly - with Sunroof Switch

1. Connect the harness to the roof console.
2. Clamp the roof console assembly onto the roof trim panel.
3. Connect the negative battery cable.

Front Reading Lamp Assembly - without Sunroof Switch

1. Connect the harness to the roof console.
2. Clamp the roof console assembly onto the roof trim panel.
3. Connect the negative battery cable.

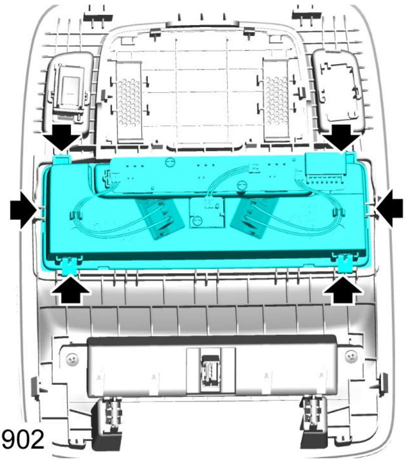
Front Reading Lamp Assembly

Remove

1. Remove the roof console assembly.

☞**Roof Console Assembly Refit**

2. Pry off the front reading lamp from the roof console.



S4413902

Refit

1. Fix the front reading lamp assembly to the roof console assembly.
2. Fit the roof console assembly.

☞**Roof Console Assembly Refit**

Front Reading Lamp Bulb

Remove

1. Disconnect the battery negative cable.
2. Using a suitable small screwdriver carefully pry off the reading lamp lens.
3. Remove and discard the front reading lamp bulb.

Refit

Tip: Take care NOT to touch the glass with your fingers; always use a cloth to handle the bulb. If necessary, clean the glass with methylated spirits to remove fingerprints.

1. Refit the front reading lamp bulb.
2. Refit the front reading lamp lens.
3. Connect the battery negative cable.

Loadspace Lamp

Remove

1. Disconnect the battery negative cable.
2. Pry out the loadspace lamp on the interior trim panel of the loadspace using suitable tools.
3. Disconnect the connector and remove the loadspace lamp assembly.

Refit

Tip: Take care NOT to touch the glass with your fingers; always use a cloth to handle the bulb. If necessary, clean the glass with methylated spirits to remove fingerprints.

1. Connect the loadspace lamp connector.
2. Refit the loadspace lamp assembly.
3. Connect the battery negative cable.

Lamps

Specifications

Torque

Description	Value
Bolt-Headlamp to body	3–5Nm
Screw-Headlamp alignment screw	0.1–0.5Nm
Nut-Tail lamp to body	3–5Nm
Nut-Rear grouped lamps to tailgate	2.7–3.3Nm
Bolt-Rear fog lamp to rear bumpers	1.5–2Nm
Nut-Center high mount stop lamp to spoiler	2.7–3.3Nm

Service Procedures

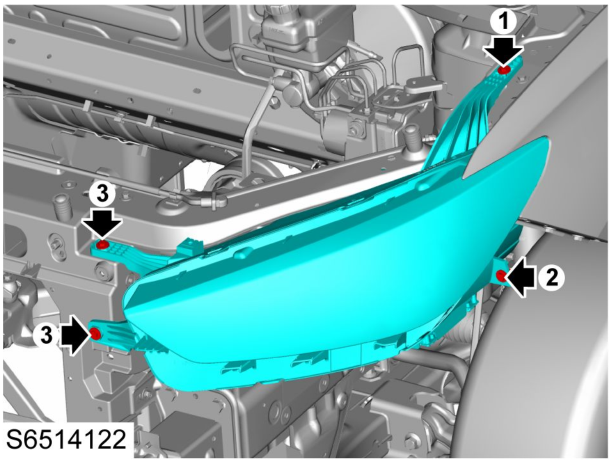
Headlamp Assembly

Remove

1. Disconnect the negative battery cable.
2. Remove the front bumper.

☞**Front Bumper Remove**

3. Remove 1 bolt (1) fixing the front reading lamp to the fender, 1 bolt (2) fixing the front reading lamp to the front bumper bracket and 2 bolts (3) fixing the front reading lamp to the front-end module.



S6514122

4. Disconnect the harness connector of the headlamp assembly.
5. Remove the headlamp assembly.

Refit

1. Connect the harness connector of the headlamp.
2. Align the headlamp assembly to the mounting point, respectively fit 4 bolts, tighten them to **3–5Nm**, and check the torque.
3. Fit the front bumper.

☞**Front Bumper Refit**

4. Connect the negative battery cable.
5. Check the headlamp alignment.

☞**Headlamp Alignment (Low Beam and High Beam)**

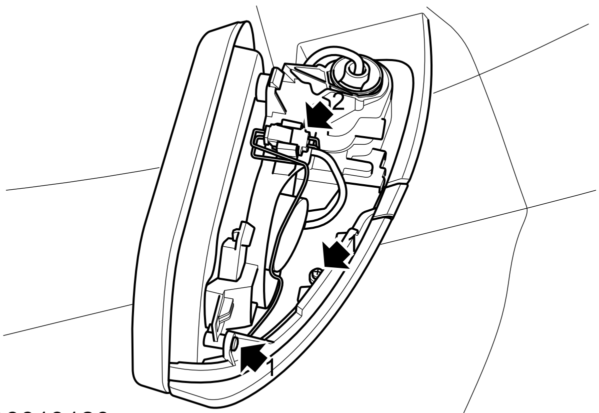
Side Direction Indicator Lamp

Remove

1. Disconnect the battery negative cable.
2. Remove the exterior mirror cover.

☞**Exterior Mirror Cover Remove**

3. Remove 2 screws (1) securing the side direction indicator lamp onto the exterior mirror.
4. Disconnect the connector (2) and remove the side direction indicator lamp.



S6613120

Refit

1. Connect the side direction indicator lamp connector.
2. Fix the side direction indicator lamp to the exterior mirror, fit 2 screws and tighten up.
3. Fit the exterior mirror cover.

☞**Exterior Mirror Cover Refit**

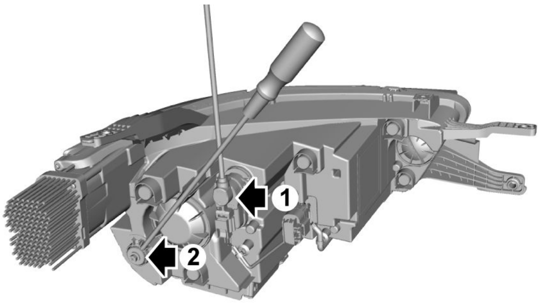
4. Connect the battery negative cable.

Headlamp Lighting Calibration

Adjustment

Warning: Any mis-alignment caused by incorrect lamp fitment or deformed mounting brackets cannot be corrected using the alignment screws, excessive adjustment toward the limits may break the lamps.

1. Turn the screw (Figure 1) to adjust the dipped beam in vertical direction, the torque is **0.1–0.5Nm**.
2. Turn the screw (Figure 2) to adjust the dipped beam in horizontal direction, the torque is **0.1–0.5Nm**.

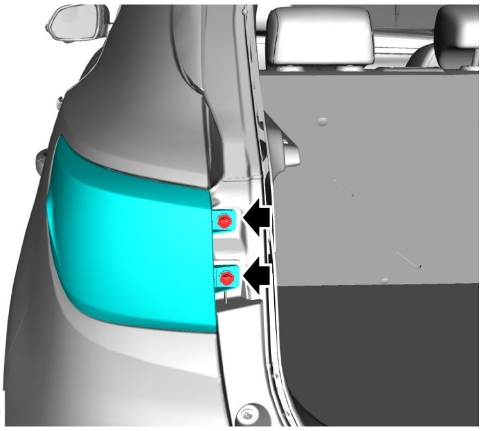


SC510602

Tail Lamp Assembly

Remove

1. Open the tail gate.
2. Disconnect the negative battery cable.
3. Remove the bolt cover of the tail lamp assembly.
4. Remove 2 bolts fixing the tail lamp assembly to the body.



SC510603

5. Release the tail lamp assembly and disconnect the connector.
6. Remove the tail lamp assembly.

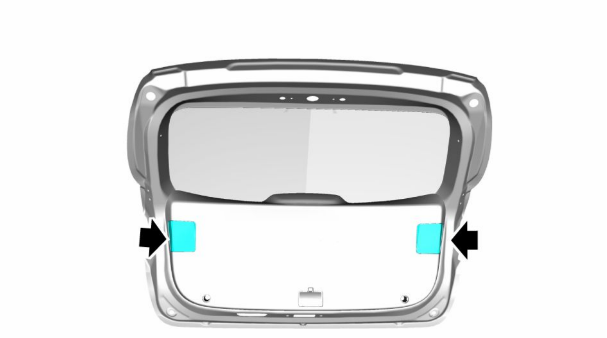
Refit

1. Connect the harness connector of the tail lamp, fit 2 bolts fixing the tail lamp assembly to the body, tighten them to **3–5Nm**, and check the torque.
2. Fit the bolt cover of tail lamp.
3. Connect the negative battery cable.
4. Close the tail gate.

Rear Combination Lamp Assembly

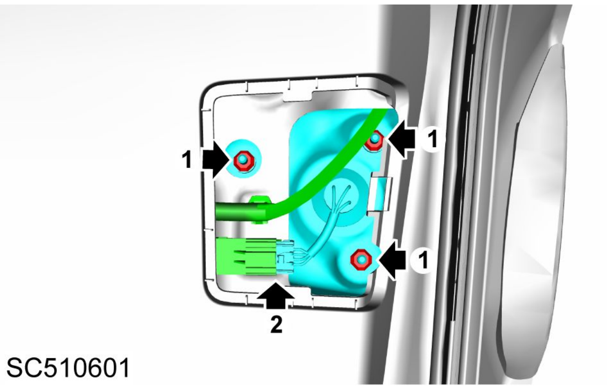
Remove

1. Disconnect the negative battery cable.
2. Remove the access port cover of the tail gate interior trim panel.



SC510606

3. Remove 3 nuts (1) fixing the rear right (left) combination lamp assembly to the tail gate.
4. Disconnect the harness connector (2) from the rear combination lamp.



SC510601

5. Remove the rear combination lamp assembly.

Refit

1. Connect the harness connector.
2. Fix the rear right (left) combination lamp assembly to the tail gate, fit 3 nuts, tighten them to **2.7–3.3Nm**, and check the torque.
3. Fit the access port cover of the tail gate interior trim panel.
4. Connect the negative battery cable.

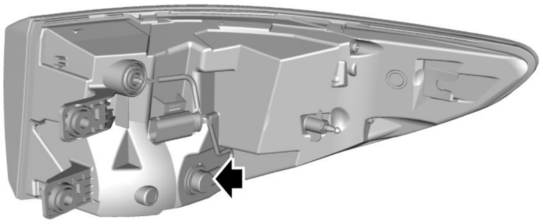
Direction Indicator Lamp Bulb

Remove

1. Disconnect the negative battery cable.
2. Remove the tail lamp assembly.

Tail Gate Interior Trim Panel Remove

3. Turn the direction indicator lamp holder counterclockwise and remove the holder.



SC510607

4. Remove the bulb from the bulb holder and discard it.

Refit

Tip: Take care NOT to touch the glass with your fingers; always use a cloth to handle the bulb. If necessary, clean the glass with methylated spirits to remove fingerprints.

1. Fit the new bulb to the lamp holder.
2. Fit the lamp holder to the tail lamp assembly.
3. Fit the tail lamp assembly.

Tail Gate Interior Trim Panel Remove

4. Connect the negative battery cable.

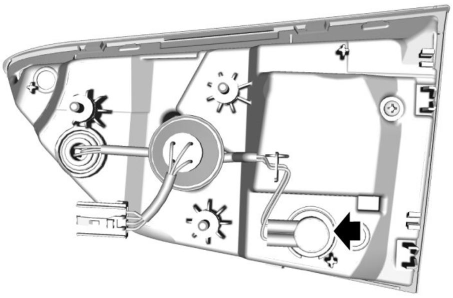
Reverse Lamp Bulb

Remove

1. Disconnect the negative battery cable.
2. Remove the rear combination lamp assembly.

☞**Tail Gate Interior Trim Panel Remove**

3. Rotate the reverse lamp holder counterclockwise to remove it.



SC510608

4. Remove the bulb from the bulb holder.

Refit

Tip: Take care NOT to touch the glass with your fingers; always use a cloth to handle the bulb. If necessary, clean the glass with methylated spirits to remove fingerprints.

1. Fit the bulb to the holder.
2. Fix the reverse lamp holder to the rear combination lamp assembly, tighten it clockwise and ensure it is fixed in place.
3. Fit the rear combination lamp assembly.

☞**Rear Combination Lamp Assembly Refit**

4. Connect the negative battery cable.

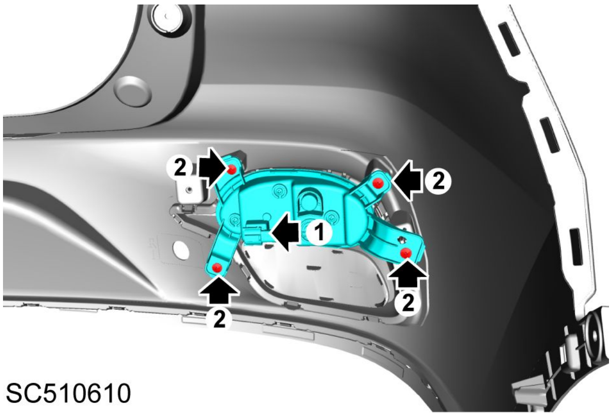
Rear Fog Lamp Assembly

Remove

1. Disconnect the negative battery cable.
2. Remove the rear bumper assembly.

☞**Rear Bumper Assembly Remove**

3. Disconnect the harness connector (1) of the rear fog lamp assembly.
4. Remove 4 screws (2) fixing the rear fog lamp assembly to the rear bumper.



SC510610

5. Remove the rear fog lamp assembly.

Refit

1. Fix the rear fog lamp assembly to the rear bumper, fit 3 screws, tighten them to **1.5–2Nm**, and check the torque.
2. Connect the harness connector of the rear fog lamp.
3. Fit the rear bumper assembly.

☞**Rear Bumper Assembly Refit**

4. Connect the negative battery cable.

Rear License Plate Lamp Assembly

Remove

1. Disconnect the battery negative cable.
2. Remove the rear bumper.

Rear Bumper Assembly Refit

3. Disconnect the connector and remove the rear license plate lamp assembly.

Refit

1. Connect the harness connector and snap the license plate lamp assembly into the rear bumper assembly.
2. Refit the rear bumper.

Rear Bumper Assembly Refit

3. Connect the battery negative cable.

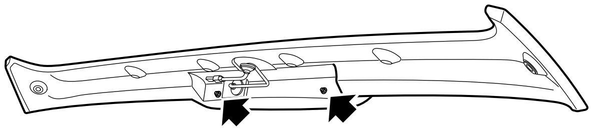
High-mounted Stop Lamp Assembly

Remove

1. Disconnect the battery negative cable.
2. Remove the spoiler assembly.

Spoiler Assembly Refit

3. Remove 2 nuts securing the high-mounted stop lamp assembly to the spoiler.



S4413016

4. Remove the high-mounted stop lamp assembly.

Refit

1. Fix the high-mounted stop lamp to the spoiler, fit 2 nuts, tighten to **2.7–3.3Nm** and check the torque.
2. Fit the spoiler assembly.

Spoiler Assembly Refit

3. Connect the battery negative cable.

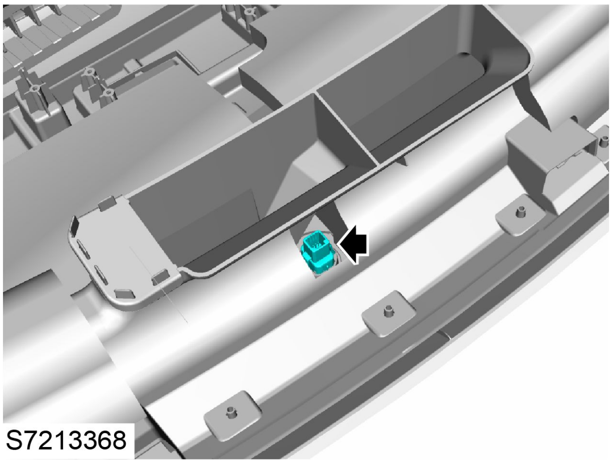
Light Sensor

Remove

1. Disconnect the battery negative.
2. Remove the upper instrument panel body.

☞**Instrument Panel Upper Body Remove**

3. Disconnect the harness connector.
4. Pry up the retaining clip and remove the light sensor.



Refit

1. Connect the light sensor harness connector.
2. Clamp the light sensor into the upper instrument panel body.
3. Fit the upper instrument panel body.

☞**Instrument Panel Upper Body Refit**

4. Connect the battery negative.

Door Panel & Accessories

Specifications

Torque

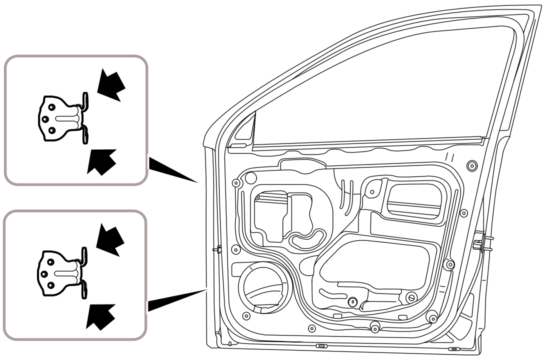
Description	Value
Bolt - door hinge to door	22–28Nm
Bolt - door striker to body	19–25Nm
Bolt - door hinge to body	30–36Nm
Bolt - door checker to body	21–29Nm
Bolt-right door lock to doorknob scaleboard	2-2.5Nm
Screw -doorknob scaleboard to door	2-2.5Nm
Bolt - door lock to door	8–10Nm
Bolt - door hinge to body	30–36Nm
Screw - exterior handle backplate to door	2–2.5Nm

Service Procedures

Front Door Adjustment

Front Door Hinge Adjustment

1. Open the front door.
2. Place a suitable wooden block on a jack, and put the jack under the door to support the front door.
3. Release 4 bolts securing the upper and lower door hinges on the front door.



SC113350

4. Carefully raise or lower the jack and adjust the front door.
5. Pretighten the hinge bolts.
6. Take away the jack, close the door and check whether the correction is good.
7. When the desired correction is achieved, tighten the bolt fixing the hinge to the door to **22–28Nm** and check the torque.

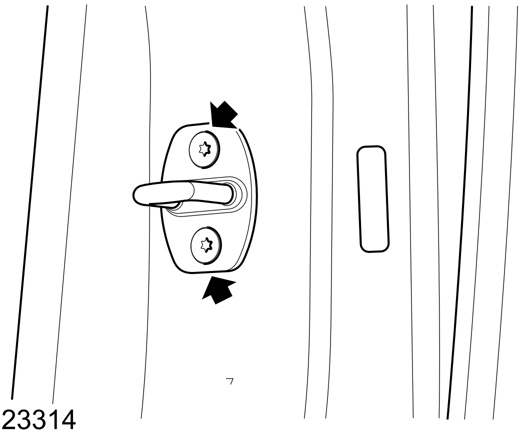
Front Door Striker Adjustment

The front door striker is a latch with two screws. In many cases, it is necessary to adjust the lock catch up, down or inward and outward:

- Frame is damaged by collision
- New door sealing strip is fitted
- Customer complains of excessive wind noise
- It is difficult to open/close the door

Adjust the striker upward/downward or inward/outward according to the following procedures:

1. The door must be positioned correctly.
2. Open the front door.
3. Loosen 2 striker screws. Adjust the striker to align the door pin, then pre-tighten the screws.



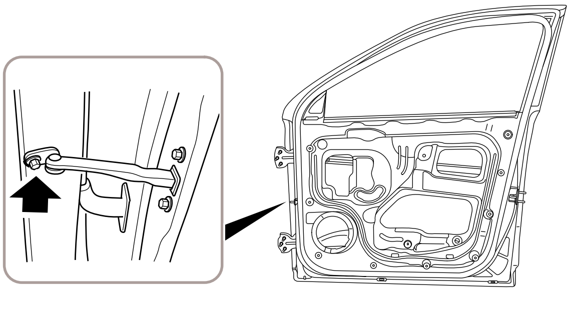
S4323314

4. Close the door, and check if the rear of the door is flush with the sheet metal of the body side panel and if the door can open and close normally.
5. After the adjustment, open the door, fit 2 screws fixing the strikers to the body, tighten them to **19–25Nm**, and check the torque.
6. Close the door.

Front Door and Hinge Assembly

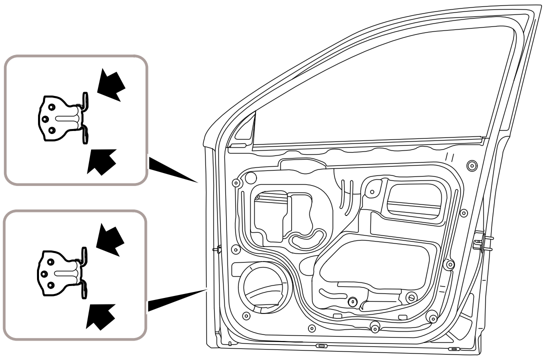
Remove

1. Disconnect the battery negative.
2. Open the front door.
3. Place a suitable wooden block on a jack, and put the jack under the door to support the front door.
4. Remove and discard 1 bolt fixing the door check to the body.



SC113361

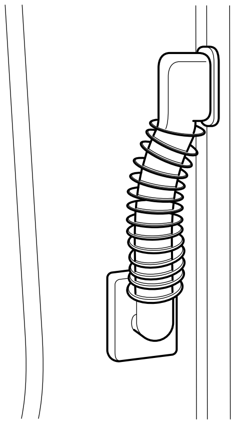
5. With assistance, hold the door, then remove and discard 4 bolts fixing the upper/lower hinges to the door.



SC113350

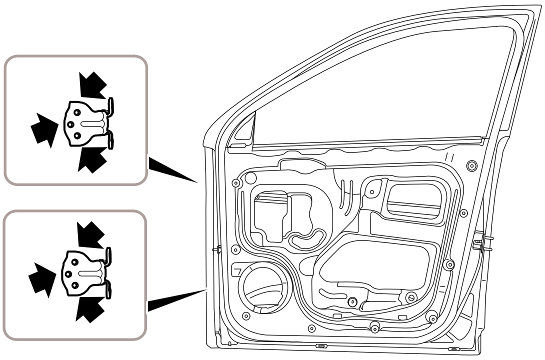
Caution: Please protect the paintwork by applying masking tape where possible and using an assistant to help with the remove and refit process.

6. With assistance, hold the door, remove the rubber seal ring on the body, and pull out the connector to disconnect the harness connector.



S4323324

7. Remove the front door assembly.
8. Remove and discard 3 bolts fixing the upper hinge to the body. Remove the front door upper hinge.
9. Remove and discard 3 bolts fixing the lower hinge to the body. Remove the front door lower hinge.



SC113351

Refit

1. Fit 3 new bolts fixing the upper hinge to the body, tighten to **30–36Nm** and check the torque.
2. Fit 3 new bolts fixing the lower hinge to the body, tighten to **30–36Nm** and check the torque.
3. With assistance, locate the door to the vehicle body.
4. Connect the connector port, and embed the rubber ring into the mounting hole of the body.
5. Fit 4 new bolts fixing the upper/lower hinges of the front door to the door, tighten to **22–28Nm** and check the torque.
6. Fit 1 new bolt fixing the door check to the body, tighten to **21–29Nm** and check the torque.
7. Close the door and check if the door can be properly opened or closed.
8. Connect the battery negative.

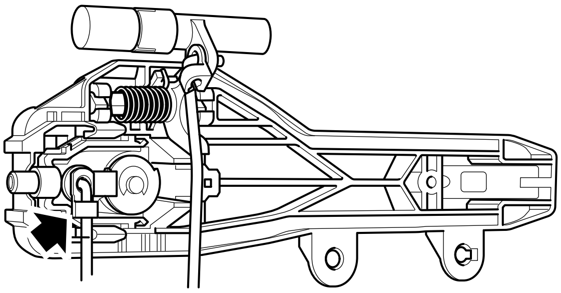
Driver Door Outer Handle and Lock Cylinder Assembly

Remove

1. Open the driver door and fully lift the door window.
2. Remove the interior trim panel and waterproof membrane from the driver door.

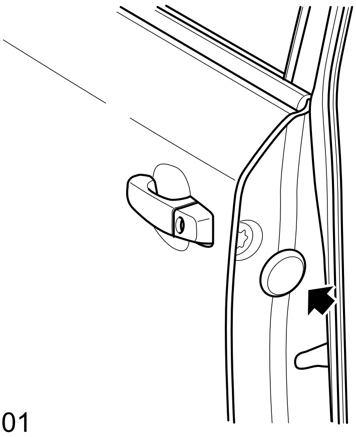
☞**Front Door Interior Trim Panel and Waterproof Membrane Refit**

3. Release the clip between the left front door lock cylinder link and the lock cylinder from the door cavity to disconnect the lock cylinder link from the lock cylinder.



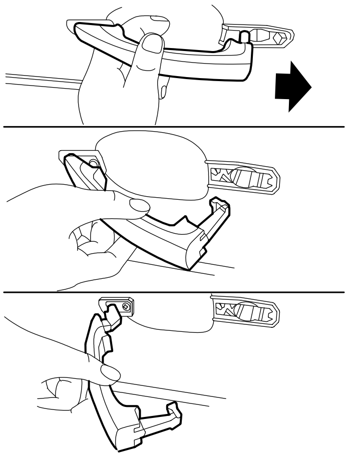
S4323306

4. Remove the cap of the lock cylinder screw at the end of the front door to access the bolt fixing the door lock cylinder to the outer door handle liner.



SC110001

5. Release the bolt, but do not remove it for it is clamped inside.
6. Pull the rear of the front door outer handle, pry the cover of the lock cylinder to remove the lock cylinder assembly.
7. Move the outer handle towards the rear body, and pull the rear of the handle outwards to disconnect it from the outer handle liner of the driver door, then remove it.



SC110017

Refit

1. Fix the rear bush of the outer handle, fit the front of the driver door outer handle into the front mounting hole of the door, and move the outer handle towards the front vehicle to fix the driver door outer handle to the liner of the outer handle.
2. Fully pull the rear of the driver door outer handle, fix the front door lock cylinder to the outer handle liner of the front door, tighten the screw to **2-2.5Nm** and check the torque.
3. Fit the lock cylinder cover.
4. Clamp the lock cylinder link into the clip of the door lock cylinder.
5. Test if the door can work properly.
6. Press the plug into the round hole on the door and secure the plug clip firmly so that seal can be achieved.
7. Fit the interior trim panel and waterproof membrane of the driver door.

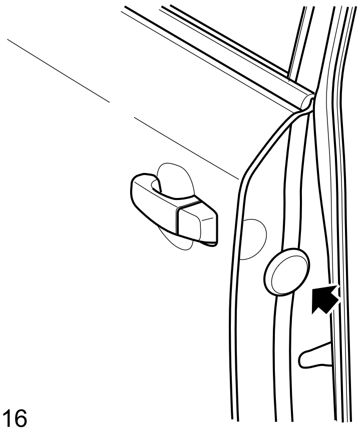
☞**Front Door Interior Trim Panel and Waterproof Membrane Refit**

8. Close the driver door.

Front Passenger Door/Rear Door Outer Handle and Lock Cylinder Cover

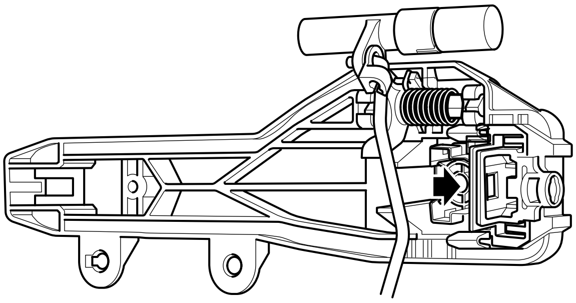
Remove

1. Open the door.
2. Remove the plug beside the door to access the plastic slide valve fixing the door lock cylinder cover to the outer door handle liner.



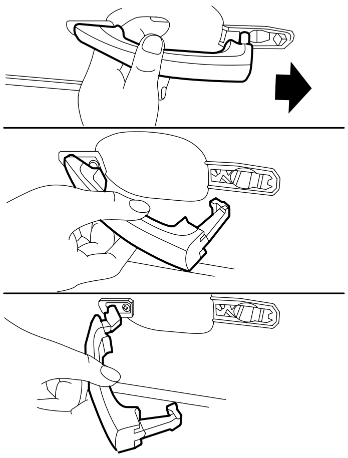
S4323316

3. Use a hook to pull the plastic slide valve on the outer handle liner towards the rear body through the plug hole beside the body, but do not remove the plastic slide valve, because it is connected with the liner.



S4323307

4. Pull the rear of the outer handle to remove the lock cylinder cover.
5. Move the outer handle towards the rear body, and pull the rear of the outer handle outwards to disconnect it from the outer handle liner, then remove it.



SC110017

Refit

1. Fix the outer handle rear bush, fit the front of the outer handle into the front door mounting hole, and move the outer handle towards the rear vehicle to fix the outer handle to the outer handle liner.
2. Fully pull the rear of the outer handle, and fit the outer handle lock cylinder cover to the outer handle liner.
3. Push the plastic slide valve towards the front vehicle through the plug hole beside the door, fix the outer handle lock cylinder cover, and confirm if it is properly clamped.
4. Check if the outer door handle can work properly.
5. Press the plug into the round hole on the door and secure the plug clip firmly so that seal can be achieved.
6. Close the door.

Driver Door Outer Handle Liner

Remove

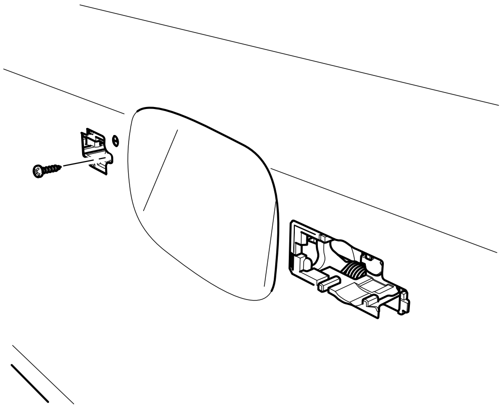
1. Open the front door.
2. Ensure the front door window can be fully ascended.
3. Remove the front door interior trim panel and waterproof membrane.

☞**Front Door Interior Trim Panel and Waterproof Membrane Refit**

4. Remove the outer handle and lock cylinder assembly of the front door.

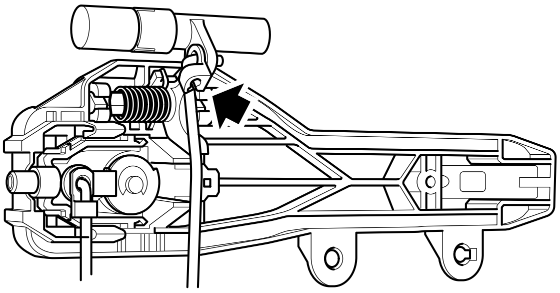
☞**Driver Door Outer Handle and Lock Cylinder Assembly**

5. Remove 1 screw fixing the front door outer handle liner to the door.



SC110004

6. Disconnect the front door outer handle link from the front door outer handle liner.



S4323326

7. Remove the outer handle liner assembly from the door cavity.

Refit

1. Fit the front door outer handle liner assembly from the cavity inside the front door, and locate it to the mounting position on the outside door panel.
2. Fit the front door outer handle link to the front door outer handle liner.
3. Fit 1 screw fixing the outer handle liner to the door from the outside of the door, tighten the screw to **2-2.5Nm** and check the torque.
4. Fix the front door outer handle link into the corresponding slot of the lock.
5. Fit the outer handle and lock cylinder assembly of the front door.

☞**Driver Door Outer Handle and Lock Cylinder Assembly Refit**

6. Try to open the door with the outer handle and lock cylinder and ensure all parts are correctly fitted.
7. Fit the front door interior trim panel and waterproof membrane.

☞**Front Door Interior Trim Panel and Waterproof Membrane Refit**

8. Close the door.

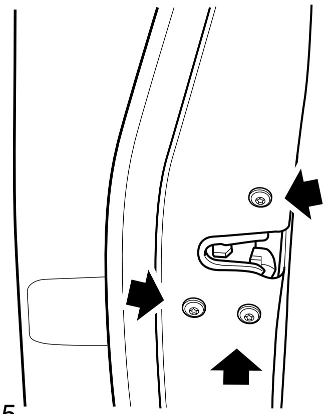
Driver Door Lock Assembly

Remove

1. Open the front door, and ensure the front door window is fully ascended.
2. Disconnect the battery negative.
3. Remove the front door interior trim panel and waterproof membrane.

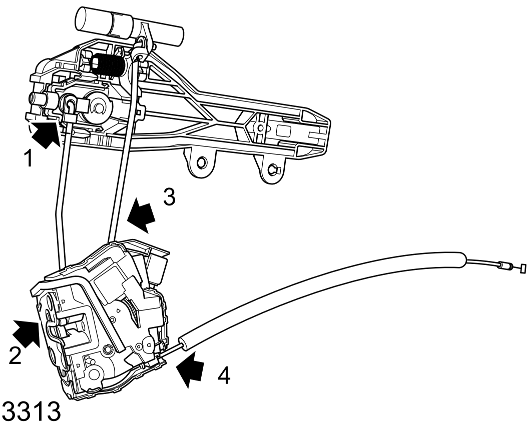
☞**Front Door Interior Trim Panel and Waterproof Membrane Refit**

4. Remove 3 bolts fixing the door lock to the door.



S4323315

5. Disconnect the harness connector of the door lock.
6. Release the clip (1) securing the lock cylinder link and front door outer handle liner, and disconnect the lock cylinder link.
7. Disconnect the lock cylinder link (2) and front door outer handle link (3) from the lock, and remove the lock assembly of the front door.
8. Disconnect the inner handle cable (4) from the lock assembly.



S4323313

Refit

1. Connect the inner cable of the front door to the front door lock.
2. Connect the harness connector of the front door lock.
3. Fit the lock cylinder link to the lock.
4. Locate the lock assembly to the door panel from the door cavity, and tighten the bolt to **8–10Nm** from top to bottom, and check the torque.
5. Fix the front door outer handle link into the corresponding clip of the front door lock.
6. Fix the lock cylinder link into the corresponding clip of the front door outer handle liner.
7. Check if the outer/inner handles of the front door can work properly.
8. Fit the front door interior trim panel and waterproof membrane.

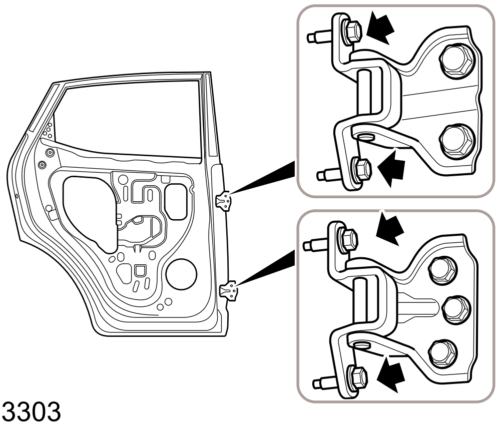
☞**Front Door Interior Trim Panel and Waterproof Membrane Refit**

9. Connect the battery negative.
10. Close the front door.

Rear Door Adjustment

Rear Door Hinge Adjustment

1. Open the rear door.
2. Place a suitable wooden block on a jack, and put the jack under the door to support the rear door.
3. Loosen 4 bolts securing the upper/lower door hinges of the rear door to the rear door.



S5523303

4. Correct the rear door with the jack.
5. Pretighten the hinge bolts.
6. Take away the jack, close the door and check whether the correction is good.
7. When the desired correction is achieved, tighten the bolt fixing the hinge to the door to **22–28Nm** and check the torque.

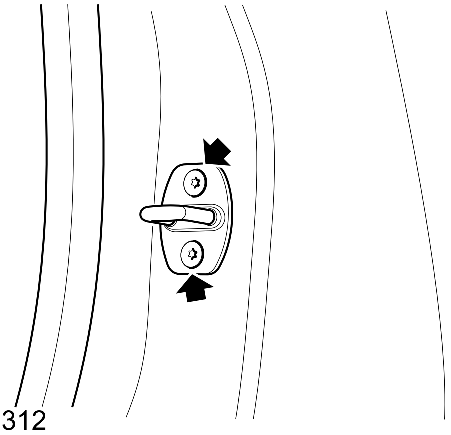
Rear Door Striker Adjustment

The striker of the rear door is a latch with two screws. In many cases, it is necessary to adjust the lock catch up, down or inward and outward:

- Frame is damaged by collision
- New door sealing strip is fitted
- Customer complains of excessive wind noise
- It is difficult to open/close the door

Following procedures shall be observed when adjusting the door striker up and down or inward and outward:

1. The door shall be properly located.
2. Open the rear door.
3. Release 2 lock catch screws. Adjust the striker to align it with the door latch, and pretighten the screws.



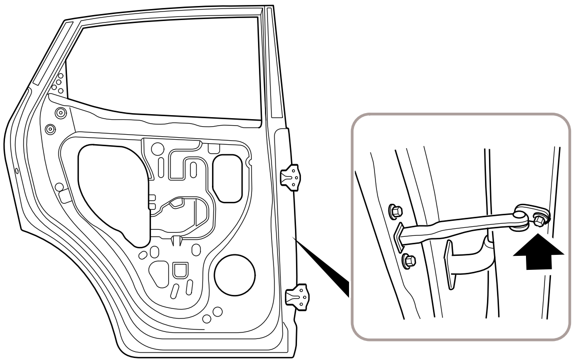
S4323312

4. Close the door, and check if the rear of the door is flush with the sheet metal of the body side panel and if the door can open and close normally.
5. Open the door after correction, tighten the screw fixing the striker to the body to **19–25Nm**, and check the torque.
6. Close the door.

Rear Door and Hinge Assembly

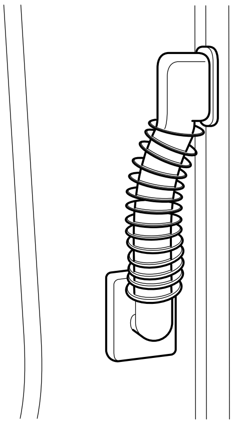
Remove

1. Disconnect the battery negative terminal.
2. Open the rear door.
3. Remove and discard 1 bolt fixing the door check to the body.



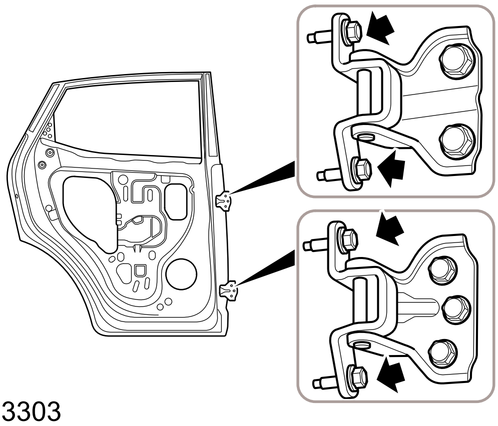
S5523306

4. Pry open the rubber ring on the body, and pull out the connector to disconnect the connector interface.



S4323324

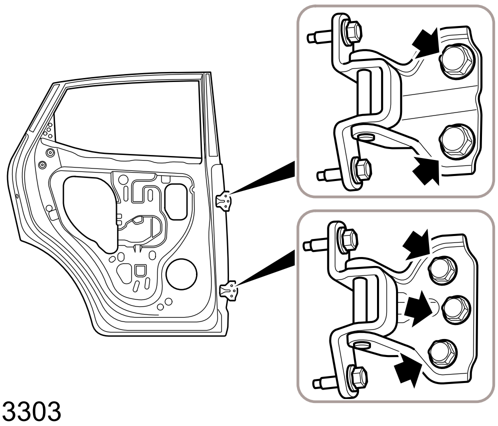
5. With assistance, hold the outside of the door, then remove and discard 4 bolts fixing the upper/lower hinges to the door.



S5523303

Caution: Please protect the paintwork by applying masking tape where possible and using an assistant to help with the remove and refit process.

6. Remove the rear door assembly.
7. From the outside of the body, remove and discard 2 bolts fixing the upper hinge to the body. Remove the rear door upper hinge.
8. From the outside of the body, remove and discard 3 bolts fixing the lower hinge to the body. Remove the rear door lower hinge.



S5523303

Refit

1. Locate the rear door lower hinge to the body.
2. Fit 3 new bolts fixing the lower hinge to the body, tighten to **30–36Nm** and check the torque.
3. Locate the rear door upper hinge to the body.
4. Fit 2 new bolts fixing the upper hinge to the body, tighten to **30–36Nm** and check the torque.
5. With assistance, locate the door to the vehicle body.
6. Connect the connector port, and embed the rubber ring into the body mounting hole.
7. Fit 4 new bolts fixing the upper and lower hinges of the rear door to the door, tighten to **22–28Nm** and check the torque.
8. Fit 1 new bolt fixing the door check to the body, tighten to **21–29Nm** and check the torque.
9. Close the door and check if the door can be properly opened or closed.
10. Connect the battery negative.

Rear Door Outer Handle Liner

Remove

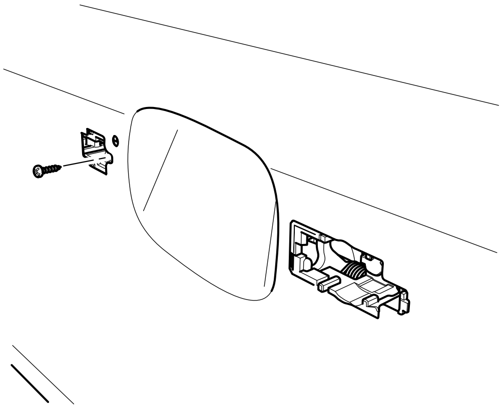
1. Open the rear door.
2. Ensure the rear door window can be fully ascended.
3. Remove the rear door interior trim panel and waterproof membrane.

☞**Rear Door Interior Trim Panel and Waterproof Membrane Refit**

4. Remove the rear door outer handle and the lock cylinder cover assembly.

☞**Rear Door Outer Handle and Lock Cylinder Cover Remove**

5. Remove 1 screw fixing the rear door outer handle liner to the door.



SC110004

6. Release the clip fixing the outer handle link to the lock.
7. Remove the outer handle liner assembly from the door cavity.
8. Disconnect the rear door outer handle link from the rear door outer handle liner.

Refit

1. Fix the rear door outer handle link into the corresponding clip of the rear door outer handle liner.
2. Fit the outer handle liner assembly of the rear door from the cavity inside the rear door, and locate it to the mounting position on the outside door panel.
3. Fit the screw fixing the outer handle liner to the door from the outside of the door, tighten the screw to **2–2.5Nm** and check the torque.
4. Fix the rear door outer handle link into the corresponding slot of the lock.
5. Secure the rear bush of the rear door outer handle.
6. Fit the rear door outer handle and the lock cylinder cover.

☞**Rear Door Outer Handle and Lock Cylinder Cover Refit**

7. Try to open the door with the outer handle and ensure all parts are correctly fitted.
8. Fit the rear door interior trim panel and waterproof membrane.

☞**Rear Door Interior Trim Panel and Waterproof Membrane Refit**

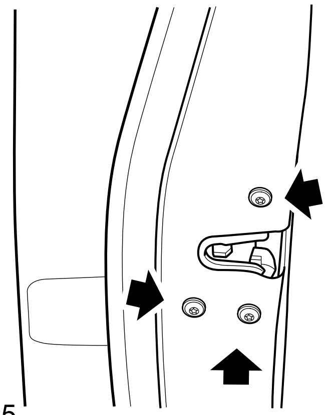
Rear Door Lock Assembly

Remove

1. Open the rear door.
2. Ensure rear window glass can be fully ascended.
3. Remove the rear door interior trim panel and waterproof membrane.

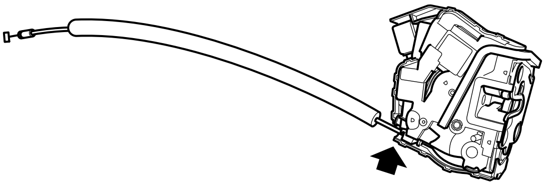
☞**Rear Door Interior Trim Panel and Waterproof Membrane Refit**

4. Pry the clip fixing the rear door outer handle link to the lock so as to release the link.
5. Remove 3 bolts fixing the rear door lock, and take out the door lock from the door cavity carefully.



S4323315

6. Disconnect the lock body harness connector.
7. Carefully disconnect the inner handle cable end of the rear door from the lock assembly to remove the lock assembly.



S4323317

Refit

1. Fit the rear door inner handle cable to the lock.
2. Connect the harness connector of the lock.
3. Locate the lock to the mounting position from the door cavity, fit 3 bolts, tighten to **8–10Nm** and check the torque.
4. Connect the rear door outer handle link to the lock, and secure the clip.
5. Check if the rear door outer/inner handle can work properly.
6. Fit the rear door interior trim panel and waterproof membrane.

☞**Rear Door Interior Trim Panel and Waterproof Membrane Refit**

7. Close the door.

Door Accessories

Specifications

Torque

Description	Value
Bolt - glass holder	7–10Nm
Bolt - window regulator guide rail to door	7–10Nm
Nut - window glass rail to door	7–10Nm
Bolt - glass to window regulator guide rail	7–10Nm

Service Procedures

Front Door Window

Remove

1. Open the front door.
2. Disconnect the battery negative terminal.
3. Remove the front door interior trim panel and waterproof membrane.

Front Door Interior Trim Panel and Waterproof Membrane Refit

Caution: Before taking down the panel, please raise the glass so that the bolts is just in the mounting holes of the door.

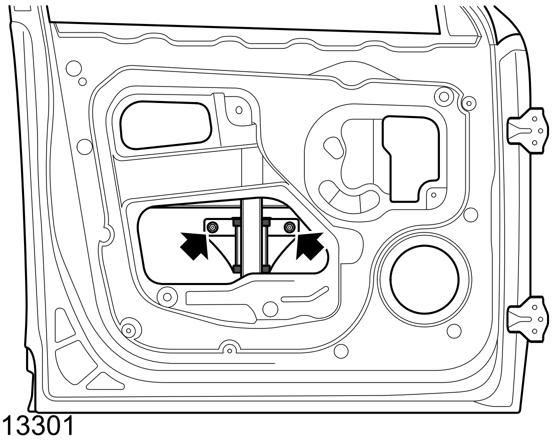
4. Remove the inner weatherstrip of the front door windowsill.

Front Door Windowsill Inner Weatherstrip Remove

5. Remove the outer weatherstrip of the front door windowsill.

Front Door Windowsill Outer Weatherstrip Remove

6. Remove 2 screws securing the glass and window regulator.



SC113301

7. Carefully remove the glass from the door window frame.

Refit

1. Carefully place the glass between the inner panel and outer panel through the window frame, and fit the slot weatherstrip from the two sides.
2. Descend the glass slowly until it touches the slider of the window regulator, fix the glass clip to the small terrace of the slider and align the hole of the glass clip with the regulator slider hole.
3. Fit 2 bolts fixing the front door window to the front door window regulator , tighten to **7–10Nm** and check the torque.
4. Fit the front door windowsill inner weatherstrip.

Front Door Windowsill Inner Weatherstrip Refit

5. Fit the front door windowsill outer weatherstrip.

Front Door Windowsill Outer Weatherstrip Refit

6. Fit the front door interior trim panel and waterproof membrane.

Front Door Interior Trim Panel and Waterproof Membrane Refit

7. Connect the battery negative terminal.
8. Close the door.

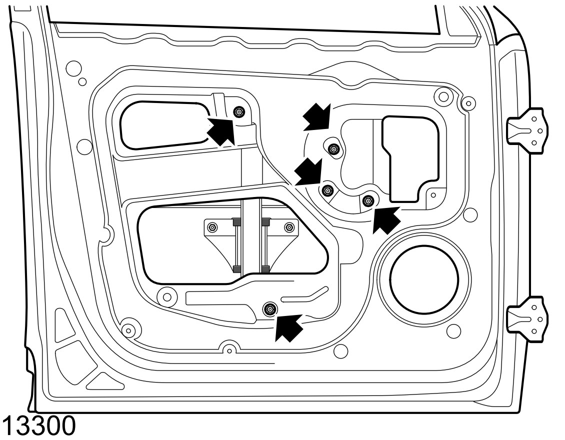
Front Door Window Regulator

Remove

1. Open the front door.
2. Disconnect the battery negative terminal.
3. Disassemble the front door window.

☞**Front Door Window Remove**

4. Remove 5 bolts fixing the glass regulator to the door panel.



SC113300

5. Disconnect the window regulator harness connector, and remove the window regulator from the door cavity.

Refit

1. Fit the glass regulator into the front door cavity, fit 5 bolts securing the glass regulator on the door panel, tighten the bolt to **7–10Nm** from top to bottom/left to right and check the torque.
2. Connect the window regulator harness connector.
3. Fit the front door window.

☞**Front Door Window Refit**

4. Connect the battery negative.
5. Check if the window regulator can function and if the window with the "one-button control" function can work.

Note: In case of power off, the "one-touch" ascending function may fail. To reset the function, press the switch to ascend the window to the top, press and hold it for 3s, then press the switch to descend the window to the bottom, press and hold it for 3s to complete the self learning. The "one-touch" ascending mode will be recovered.

6. Close the front door.

Front Door Window Regulator Control

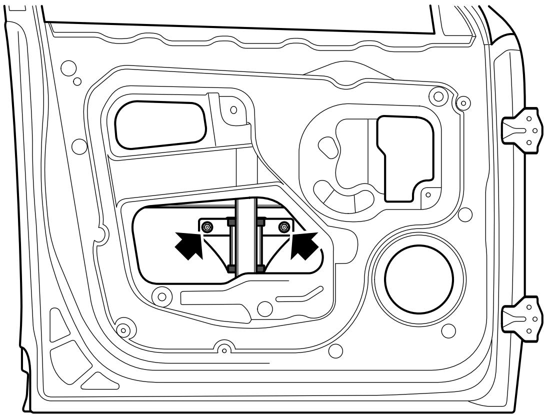
Adjustment

1. Open the front door.
2. Disconnect the battery negative terminal.
3. Remove the front door interior trim panel and waterproof membrane.

☞**Front Door Interior Trim Panel and Waterproof Membrane Refit**

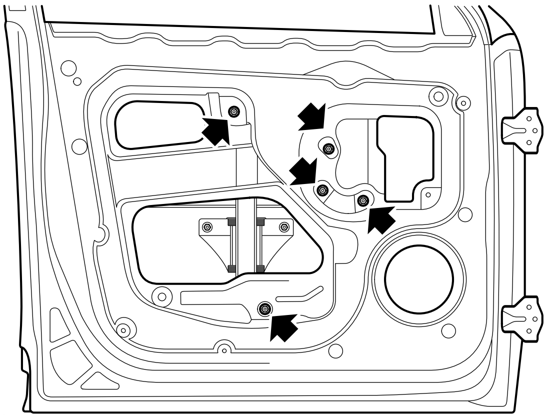
Caution: Before taking down the panel, please raise the glass so that the bolts is just in the mounting holes of the door.

4. Release 2 bolts securing the glass.



SC113301

5. Release 5 bolts securing the window regulator.



SC113300

6. Adjust the glass so that it can mesh with the weatherstrip on both ends, and ensure the glass works well.
7. Tighten 5 bolts of the window regulator to **7–10Nm** and check the torque.
8. Tighten the bolt of the glass to **7–10Nm** and check the torque.
9. Ascend/descend the glass to see if it can work properly or if it is properly located.
10. Fit the front door interior trim panel and waterproof membrane.

☞**Front Door Interior Trim Panel and Waterproof Membrane Refit**

11. Connect the battery negative terminal.
12. Check if the window regulator can function and if the window with the "one-button control" function can work.

Note: In case of power off, the "one-touch" ascending function may fail. To reset the function, press the switch to ascend the window to the top, press and hold it for 3s, then press the switch to descend the window to the bottom, press and hold it for 3s to complete the self learning. The "one-touch" ascending mode will be recovered.

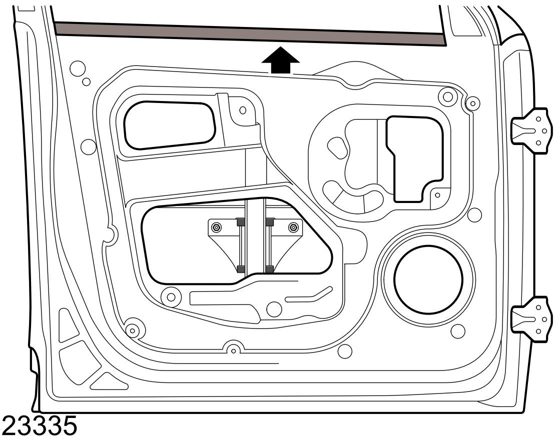
Front Door Windowsill Inner Weatherstrip

Remove

1. Open the front door.
2. Remove the front door interior trim panel.

☞**Front Door Interior Trim Panel and Waterproof Membrane Refit**

3. Pull up and remove the front door windowsill inner weatherstrip.



S4323335

Refit

1. Align the opening of the weatherstrip with the inner door panel seam, and fit the front door windowsill inner weatherstrip.
2. Fit the front door interior trim panel.

☞**Front Door Interior Trim Panel and Waterproof Membrane Refit**

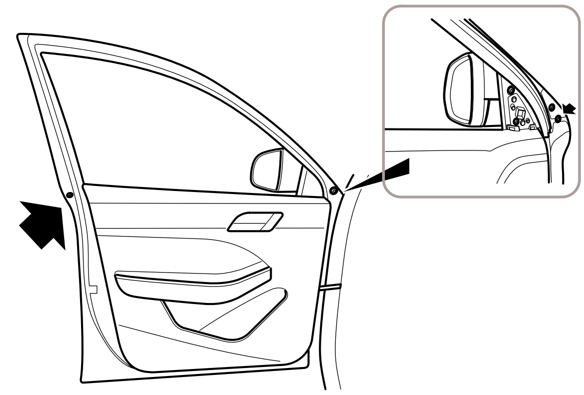
Front Door Windowsill Outer Weatherstrip

Remove

1. Open the front door.
2. Remove the exterior rearview mirror assembly.

Exterior Rearview Mirror Assembly Remove

3. Uncover the door weatherstrip near the exterior rearview mirror assembly, and remove 2 screws securing the two ends of the outer weatherstrip of the front door windowsill to door panel.



S4323318

4. Carefully pull the outer weatherstrip from the front to the end of the door, and remove it.

Refit

1. Align the front door windowsill outer weatherstrip with the door panel, then fit it to the revers of the door panel.
2. Fit 2 screws securing the front door windowsill outer weatherstrip to door panel and tighten the screw.
3. Fit the door weatherstrip on the exterior rearview mirror assembly.
4. Fit the exterior rearview mirror assembly.

Exterior Rearview Mirror Assembly Refit

5. Close the front door.

Front Door Window Slideway Weatherstrip

Remove

1. Open the front door.
2. Disconnect the battery negative terminal.
3. Disassemble the front door window.

Front Door Window Remove

4. Remove the front door window slideway weatherstrip carefully.

Refit

1. Fit the front door window slideway weatherstrip.
2. Fit the front door window.

Front Door Window Refit

3. Connect the battery negative terminal.
4. Close the door.

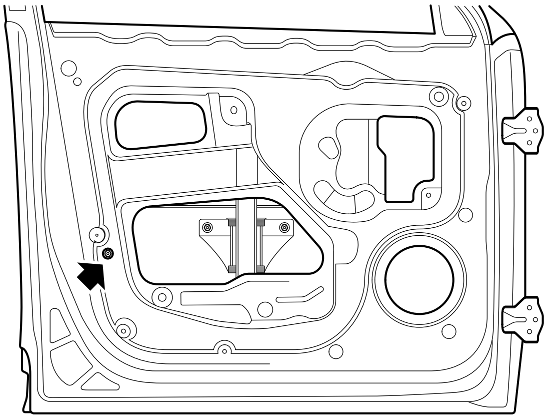
Front Door Glass Rail

Remove

1. Open the door, and fully lift the window.
2. Remove the front door interior trim panel and waterproof membrane.

☞**Front Door Interior Trim Panel and Waterproof Membrane Refit**

3. Remove 1 nut securing the glass rail on the inner door panel, and remove the glass rail of the front door.



SC113306

Refit

1. Fit 1 nut securing the front door glass rail on the door panel, tighten to **7–10Nm** and check the torque.
2. Fit the front door interior trim panel and waterproof membrane.

☞**Front Door Interior Trim Panel and Waterproof Membrane Refit**

3. Close the door.

Rear Door Window

Remove

1. Disconnect the battery negative terminal.
2. Remove the rear door interior trim panel and waterproof membrane.

☞**Rear Door Interior Trim Panel and Waterproof Membrane Refit**

Caution: Before taking down the panel, please raise the glass so that the bolts is just in the mounting holes of the door.

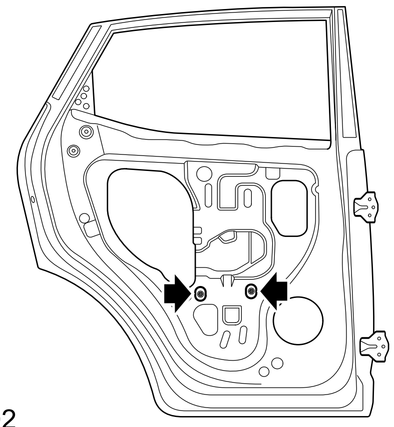
3. Remove the rear door windowsill inner weatherstrip.

☞**Rear Door Windowsill Inner Weatherstrip Remove**

4. Remove the rear door windowsill outer weatherstrip.

☞**Rear Door Windowsill Outer Weatherstrip Remove**

5. Remove 2 bolts securing the glass and window regulator.



SC113302

6. Carefully remove the glass from the door window frame.

Refit

1. Place the glass between the inner panel and outer panel through the door window frame, and fit the slot weatherstrip from the two sides.
2. Descend the glass slowly until it touches the slider of the window regulator, fix the glass clip to the small terrace of the slider and align the hole of the glass clip with the regulator slider hole.
3. Fit 2 bolts fixing the rear door window to the rear door window regulator, tighten to **7–10Nm** and check the torque.
4. Fit the rear door windowsill outer weatherstrip.

☞**Rear Door Windowsill Outer Weatherstrip Refit**

5. Fit the rear door windowsill inner weatherstrip.

☞**Rear Door Windowsill Inner Weatherstrip Refit**

6. Fit the rear door interior trim panel and waterproof membrane.

☞**Rear Door Interior Trim Panel and Waterproof Membrane Refit**

7. Connect the battery negative terminal.
8. Close the rear door.

Rear Door Window Regulator

Remove

1. Open the rear door.
2. Disconnect the battery negative terminal.
3. Remove the rear door interior trim panel and waterproof membrane.

☞**Rear Door Interior Trim Panel and Waterproof Membrane Refit**

Caution: Before taking down the panel, please raise the glass so that the bolts is just in the mounting holes of the door.

4. Remove the rear door windowsill inner weatherstrip.

☞**Rear Door Windowsill Inner Weatherstrip Remove**

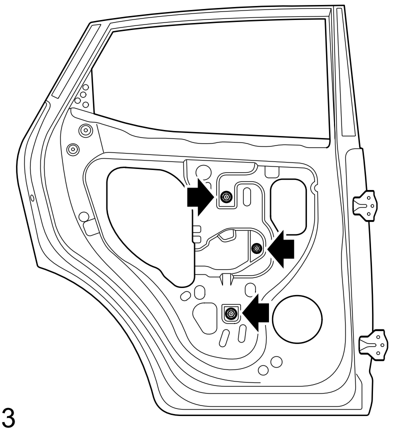
5. Remove the rear door windowsill outer weatherstrip.

☞**Rear Door Windowsill Outer Weatherstrip Remove**

6. Remove the rear door window.

☞**Rear Door Window Remove**

7. Remove 3 bolts fixing the window regulator to the door panel.



SC113303

8. Disconnect the window regulator harness connector, and remove the window regulator from the door window frame.

Refit

1. Fit the glass regulator into the rear door cavity, fit 3 bolts securing the window regulator on the door panel, tighten the bolt to **7–10Nm** from top to bottom/left to right and check the torque.
2. Connect the window regulator harness connector.
3. Fit the rear door glass.

☞**Rear Door Glass Refit**

4. Fit the rear door windowsill inner weatherstrip.

☞**Rear Door Windowsill Inner Weatherstrip Refit**

5. Fit the rear door windowsill outer weatherstrip.

☞**Rear Door Windowsill Outer Weatherstrip Refit**

6. Fit the rear door interior trim panel and waterproof

membrane.

☞**Rear Door Interior Trim Panel and Waterproof Membrane Refit**

7. Connect the battery negative.
8. Check if the window regulator can work.
9. Close the rear door.

Rear Door Window Regulator Control

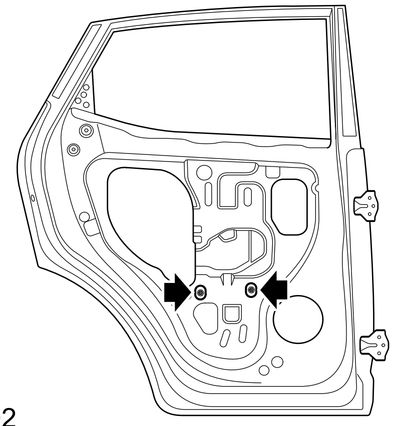
Adjustment

1. Open the rear door.
2. Disconnect the battery negative.
3. Remove the rear door interior trim panel and waterproof membrane.

☞**Rear Door Interior Trim Panel and Waterproof Membrane Refit**

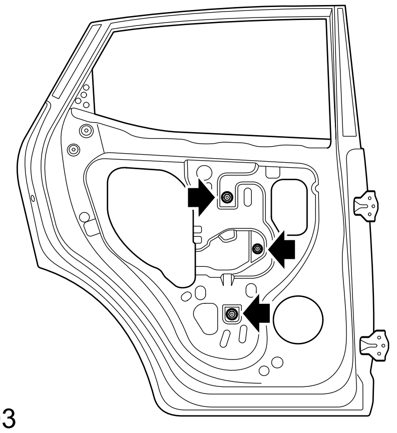
Caution: Before taking down the panel, please raise the glass so that the bolts is just in the mounting holes of the door.

4. Release 2 bolts securing the glass.



SC113302

5. Release 3 bolts securing the window regulator.



SC113303

6. Adjust the glass so that it can mesh with the weatherstrip on both ends, and ensure the glass works well.
7. Tighten the bolt of the window regulator to **7–10Nm** and check the torque.
8. Tighten the bolt of the glass to **7–10Nm** and check the torque.
9. Ascend/descend the glass to see if it can work properly or if it is properly located.
10. Fit the rear door interior trim panel and waterproof membrane.

☞**Rear Door Interior Trim Panel and Waterproof Membrane Refit**

11. Connect the battery negative.
12. Check if the window regulator can work.

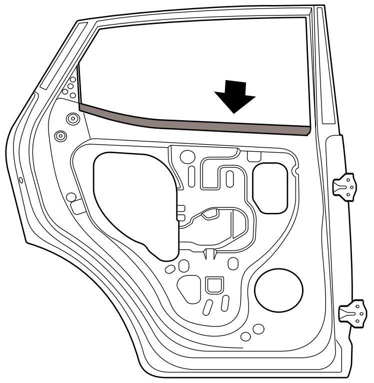
Rear Door Windowsill Inner Weatherstrip

Remove

1. Open the rear door.
2. Remove the rear door interior trim panel and waterproof membrane.

☞**Rear Door Interior Trim Panel and Waterproof Membrane Remove**

3. Remove the rear door windowsill inner weatherstrip.



S4323321

Refit

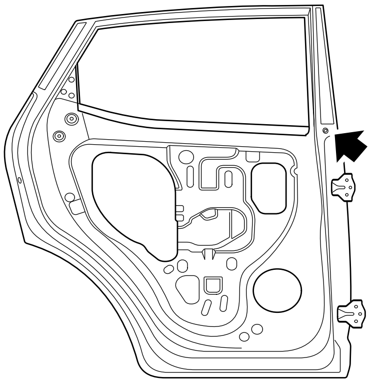
1. Align the opening of the weatherstrip with the inner door panel seam, and fit the rear door windowsill inner weatherstrip.
2. Fit the rear door interior trim panel and waterproof membrane.

☞**Rear Door Interior Trim Panel and Waterproof Membrane Refit**

Rear Door Windowsill Outer Weatherstrip

Remove

1. Open the rear door.
2. Lift the door weatherstrip on the front of the rear door, remove 1 screw, and pull the outer weatherstrip up to remove it.



S4323322

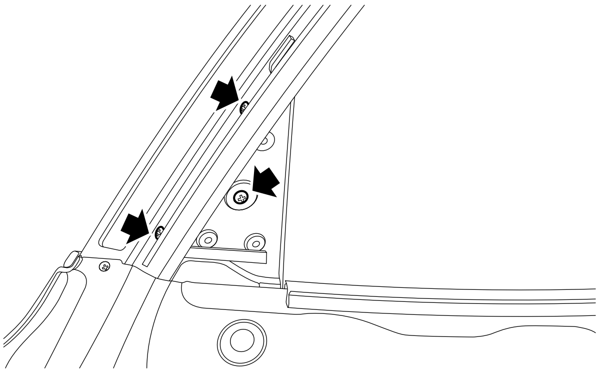
Refit

1. Align the rear door windowsill outer weatherstrip with the door panel, then fit them to the revers of the door panel from the front to the end of the rear door, tighten 1 screw and fit the door weatherstrip.
2. Close the rear door.

Rear Door Window Frame Exterior Trim Panel

Remove

1. Uncover the rear door weatherstrip on the rear door window frame exterior trim panel.
2. Pry the rear door triangle trim cover.
3. Remove 3 screws securing the rear door window frame exterior trim panel on the door, and remove the rear door window frame exterior trim panel.



S4323401

Refit

1. Position the rear door window frame exterior trim panel on the door, fit the clip and 3 screws, then tighten them.
2. Fit the rear door triangle trim cover.
3. Fit the rear door weatherstrip on the rear door window frame exterior trim panel.

Rear Door Window Slideway Weatherstrip

Remove

1. Open the rear door.
2. Disconnect the battery negative terminal.
3. Remove the rear door window.

☞**Rear Door Window Remove**

4. Remove the rear door window slideway weatherstrip carefully.

Refit

1. Fit the rear door glass slot weatherstrip.
2. Fit the rear door glass.

☞**Rear Door Glass Refit**

3. Connect the battery negative terminal.
4. Close the rear door.

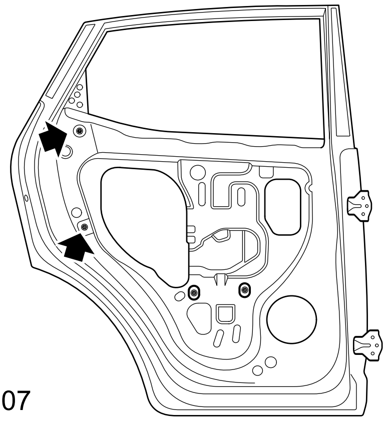
Rear Door Glass Rail

Remove

1. Open the door, and fully lift the window.
2. Remove the rear door interior trim panel and waterproof membrane.

☞**Rear Door Interior Trim Panel and Waterproof Membrane Refit**

3. Remove 2 nuts securing the glass rail on the inner door panel, and remove the rear door glass rail.



SC113307

Refit

1. Fit 2 nuts securing the rear door glass rail on the inner door panel, tighten to **7–10Nm** and check the torque.
2. Fit the rear door interior trim panel and waterproof membrane.

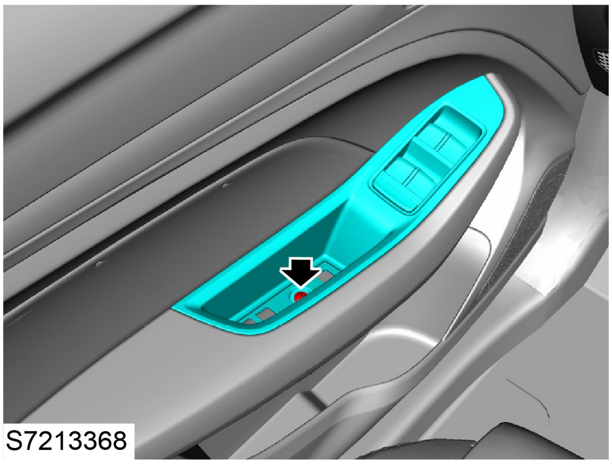
☞**Rear Door Interior Trim Panel and Waterproof Membrane Refit**

3. Close the door.

Power Window Switch - Driver Side

Remove

1. Disconnect the negative battery cable.
2. Pry off the screw cover.
3. Remove 1 screw fixing the power window switch to the door interior trim panel.



4. Pry off the clip fixing the power window switch to the door interior trim panel.
5. Disconnect the harness connector and remove the driver power window switch.

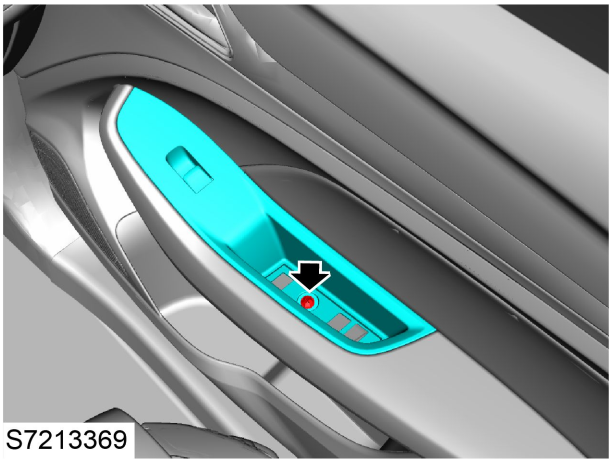
Refit

1. Connect the harness connector of the driver power window switch.
2. Fix the power window switch to the door interior trim panel, fit and tighten 1 screw.
3. Fit the screw cover.
4. Connect the negative battery cable.
5. Perform a self-learning for the window regulator. Refer to Module Self-learning and Programming Manual, "Window Regulator Initialisation Self-learning".

Power Window Switch - Others

Remove

1. Disconnect the negative battery cable.
2. Pry off the screw cover.
3. Remove 1 screw fixing the power window switch to the door interior trim panel.



4. Pry off the clip fixing the power window switch to the door interior trim panel.
5. Disconnect the harness connector and remove the power window switch.

Refit

1. Connect the harness connector of the power window switch.
2. Fix the power window switch to the door interior trim panel, fit and tighten 1 screw.
3. Fit the screw cover.
4. Connect the negative battery cable.

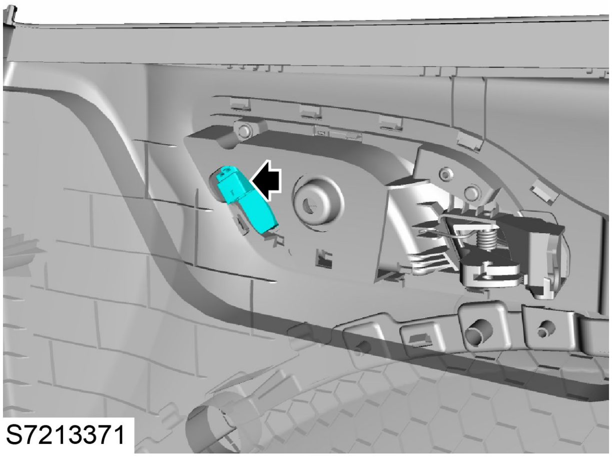
Door Lock Switch

Remove

1. Disconnect the negative battery cable.
2. Remove the driver side door interior trim panel.

☞**Driver Side Door Interior Trim Panel Remove**

3. Disconnect the harness connector of the door lock switch.
4. Loosen the clip and remove the door lock switch.



Refit

1. Fit the door lock switch.
2. Connect the harness connector of the door lock switch.
3. Fit the driver side door interior trim panel.

☞**Driver Side Door Interior Trim Panel Refit**

4. Connect the negative battery cable.

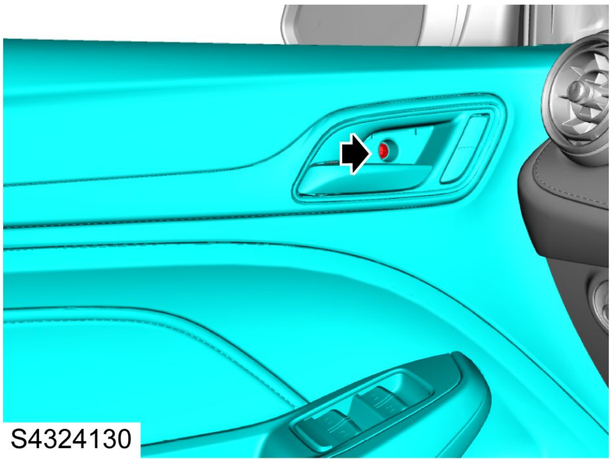
Door Molding

Service Procedures

Front Door Interior Trim Panel and Waterproof Membrane

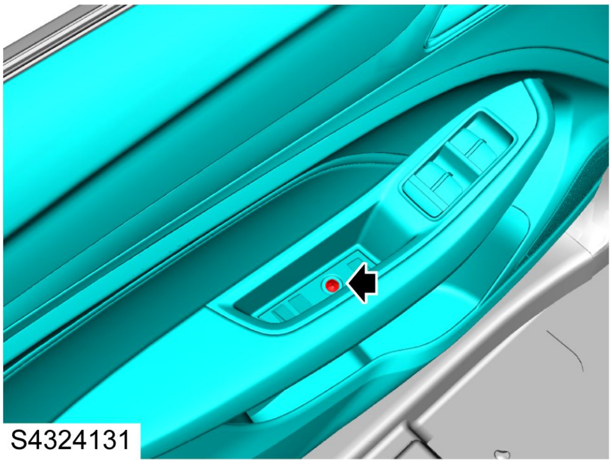
Remove

1. Disconnect the battery negative.
2. Pry off the interior handle screw hole trim cover, and remove 1 screw fixing the door interior handle to the door.



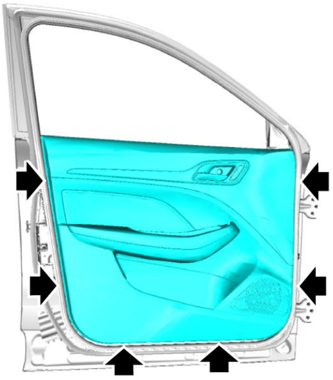
S4324130

3. Pry off the door handle pull cup screw trim cover , remove 1 screw fixing the interior trim panel to the door.



S4324131

4. Pry off clips fixing the rear mirror trim panel to the door.
5. Pry off clips fixing the door trim panel to the door, remove and discard the clip.



S4324132

6. Disconnect the interior handle cable assembly cable, Remove the front door interior trim panel.
7. Remove 2 screws fixing the door trim panel mounting bracket and take down the door trim panel mounting bracket.
8. Remove the front door waterproof membrane from the door sheet metal.

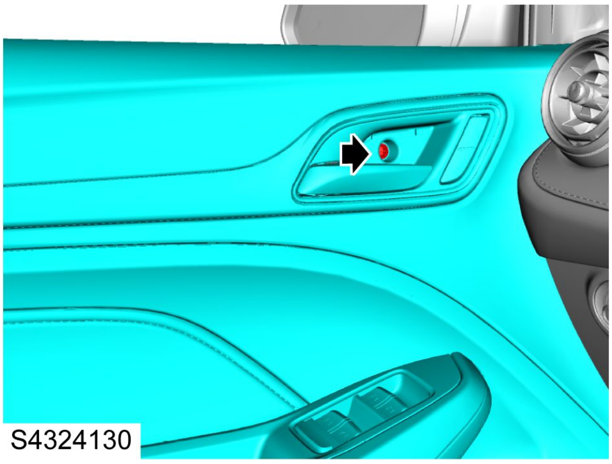
Refit

1. Pass the electrical interface through the corresponding location of the waterproof membrane, correspond the waterproof membrane locating hole with the door trim panel mounting bracket, the upper edge is parallel with the upper edge of the door sheet metal, and fit the door waterproof membrane.
2. Fit 2 screws securing the door trim panel mounting bracket and tighten screws.
3. Fit the interior handle cable assembly cable. Align the new clip with the corresponding mounting hole of the sheet metal. Fit the front door interior trim panel and rear mirror trim panel on the door.
4. Connect the window regulator switch harness connector, and fit the window regulator switch.
5. Fit 1 retaining screw securing the front door interior trim panel pull cup on the door and tighten screw.
6. Fit 1 retaining screw securing the front door interior trim panel on the door and tighten screw.
7. Connect the battery negative.

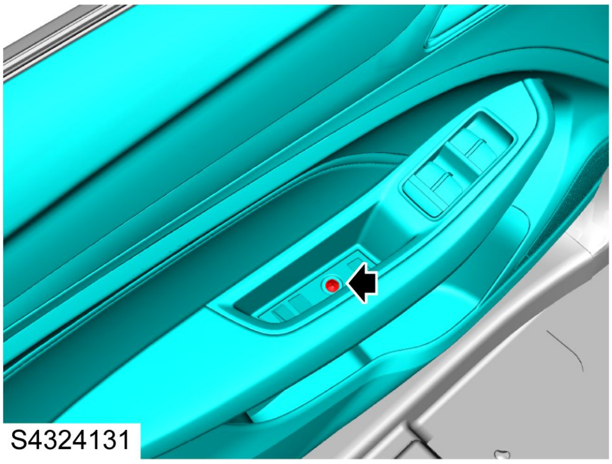
Front Door Interior Handle

Remove

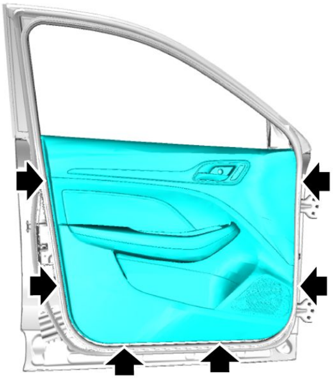
1. Disconnect the battery negative.
2. Pry off the interior handle screw hole trim cover, and remove 1 screw fixing the door interior handle to the door.


S4324130

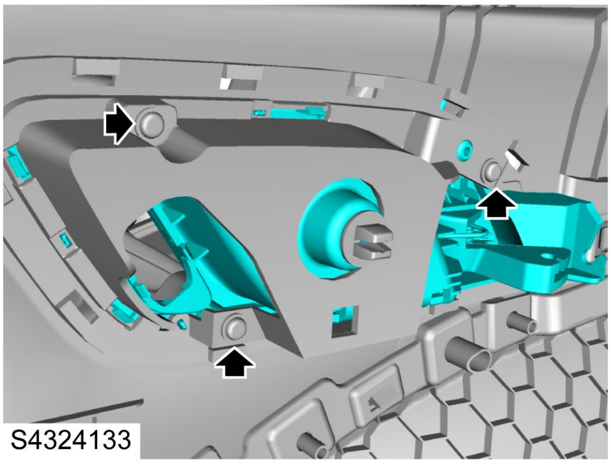
3. Pry off the door handle pull cup screw trim cover , remove 1 screw fixing the interior trim panel to the door.


S4324131

4. Pry off clips fixing the rear mirror trim panel to the door.
5. Pry off clips fixing the door trim panel to the door, remove and discard the clip.


S4324132

6. Disconnect the interior handle cable assembly cable, Remove the front door interior trim panel.
7. Remove 3 screws fixing the front door interior trim panel to the trim panel.


S4324133

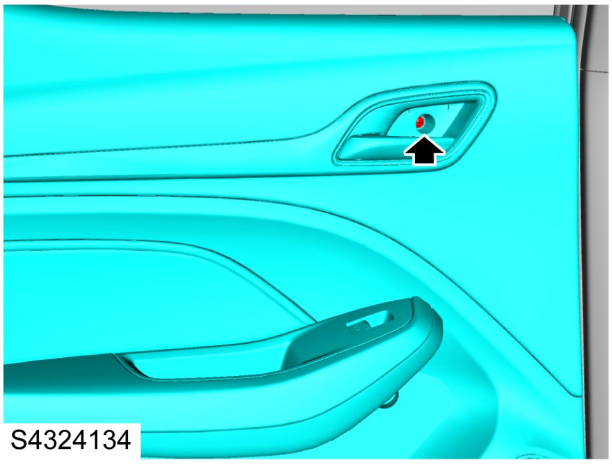
Refit

1. Locate the door interior handle to the front door interior trim panel and secure with 3 screws.
2. Align the new clip with the corresponding mounting hole of the sheet metal, fit the interior handle cable assembly cable, connect the harness connector and fit the front door interior trim panel on the door.
3. Fit and tighten 1 retaining screw securing the front door interior trim panel pull cup on the door. Fit the door handle pull cup screw trim cover.
4. Fit and tighten 1 retaining screw securing the interior handle on the door. Fit the interior handle trim cover.
5. Connect the battery negative.

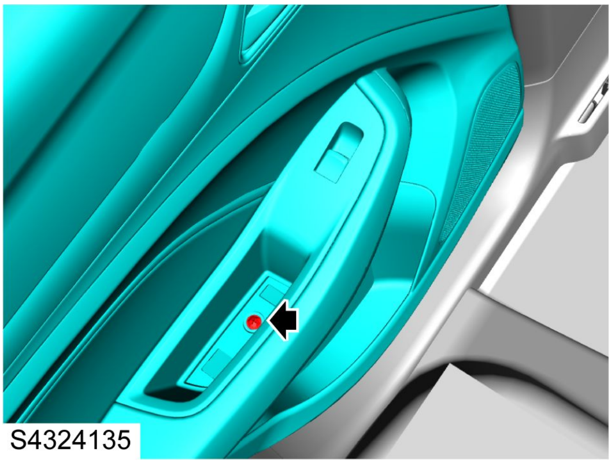
Rear Door Interior Trim Panel and Waterproof Membrane

Remove

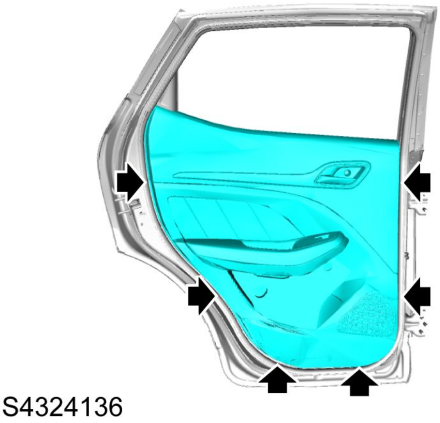
1. Disconnect the battery negative.
2. Pry off the interior handle screw hole trim cover, and remove 1 screw fixing the rear door interior trim panel to the door.



3. Pry off the door handle pull cup screw trim cover , remove 1 screw fixing the rear door interior trim panel to the door.



4. Pry off the window regulator switch with tool carefully. Disconnect the window regulator switch harness connector, and remove the window regulator switch.
5. Pry off clips fixing the triangular trim panel to the door.
6. Pry off clips fixing the door trim panel to the door, remove and discard the clip.



7. Disconnect the interior handle cable assembly cable, and disconnect the harness connector. Remove the rear door interior trim panel.
8. Remove 2 screws fixing the door trim panel mounting bracket and take down the door trim panel mounting bracket.
9. Remove the front door waterproof membrane from the door sheet metal.

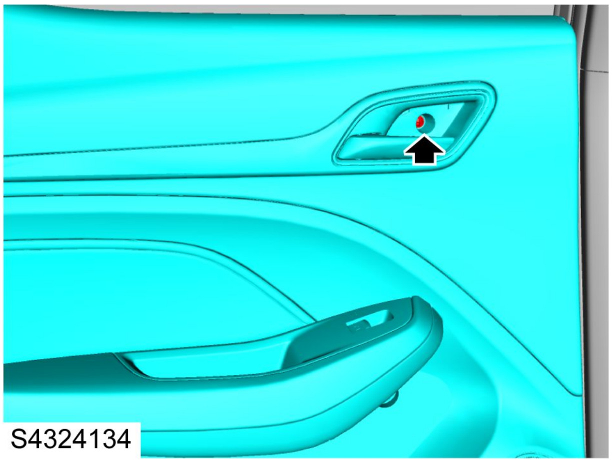
Refit

1. Pass the harness connectors through the corresponding positions of the waterproof membrane. Correspond the waterproof membrane locating hole with the door trim panel mounting bracket, the upper edge is parallel with the upper edge of the door sheet metal, and fit the door waterproof membrane.
2. Fit 2 screws securing the door trim panel mounting bracket and tighten screws.
3. Align the new clip with the corresponding mounting hole of the sheet metal, fit the interior handle cable assembly cable, fit the front door interior trim panel on the door.
4. Connect the window regulator switch harness connector. Fit the window regulator switch.
5. Fit and tighten 1 retaining screw securing the front door interior trim panel pull cup on the door. Fit the door handle pull cup screw trim cover.
6. Fit and tighten 1 retaining screw securing the interior handle on the door. Fit the interior handle trim cover.
7. Connect the battery negative.

Rear Door Interior Handle

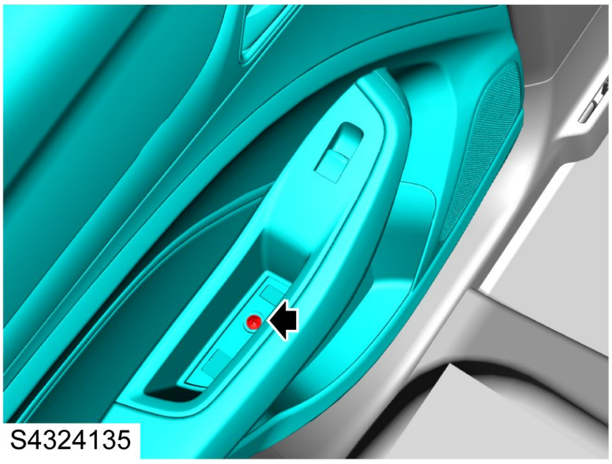
Remove

1. Disconnect the battery negative.
2. Pry off the interior handle screw hole trim cover, and remove 1 screw fixing the door interior handle to the door.



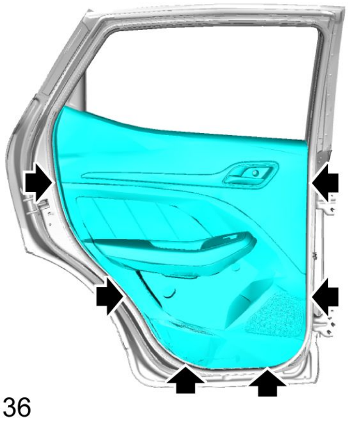
S4324134

3. Pry off the door handle pull cup screw trim cover , remove 1 screw fixing the interior trim panel to the door.



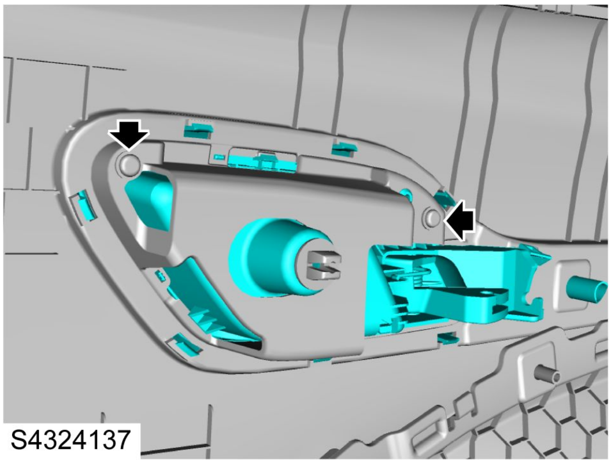
S4324135

4. Pry off the window regulator switch with tool carefully. Disconnect the window regulator switch harness connector, and remove the window regulator switch.
5. Pry off clips fixing the triangular trim panel to the door.
6. Pry off clips fixing the door trim panel to the door, remove and discard the clip.



S4324136

7. Disconnect the interior handle cable assembly cable, Remove the rear door interior trim panel.
8. Remove 2 screws fixing the rear door interior trim panel to the trim panel.



S4324137

Refit

1. Locate the door interior handle to the front door interior trim panel and secure with 2 screws.
2. Align the new clip with the corresponding mounting hole of the sheet metal, fit the interior handle cable assembly cable, fit the rear door interior trim panel on the door.
3. Connect the window regulator switch harness connector. Fit the window regulator switch.
4. Fit and tighten 1 retaining screw securing the rear door interior trim panel pull cup on the door. Fit the door handle pull cup screw trim cover.
5. Fit and tighten 1 retaining screw securing the interior handle on the door. Fit the interior handle trim cover.
6. Connect the battery negative.

Fender

Specifications

Torque

Description	Value
Bolt - fender to body	7–10Nm
Nut - fender to body	7–10Nm
Bolt-A/C air intake grille to body	2–3Nm

Service Procedures

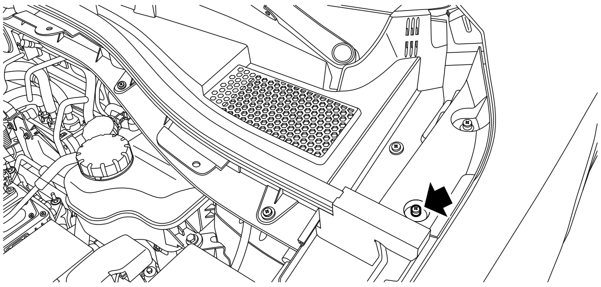
Fender

Remove

1. Remove the headlamp assembly.

Headlamp Assembly Remove

2. Remove 1 screw each side fixing the A/C air inlet grille assembly to the fender.

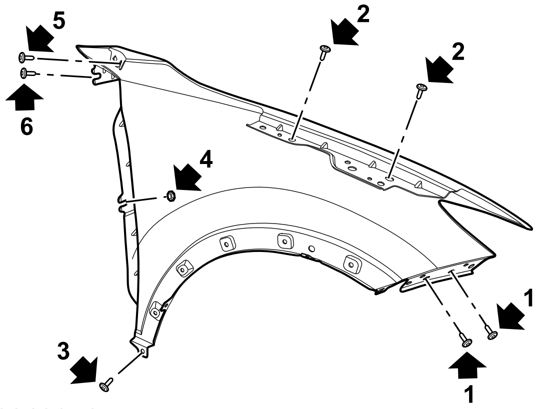


S5114011

3. Remove the front wheelhouse liner.

Front Wheelhouse Liner Remove

4. Remove 2 bolts (1) fixing the fender to the fender bracket.
5. Remove 2 bolts (2) fixing the fender to the body.
6. Remove 1 bolt (3) fixing the fender to the body.
7. Remove the acoustic pad of the fender, and remove 1 nut (4) from the back.
8. Unscrew 1 fender mounting screw (5) at the side corner of A/C air inlet grille.
9. Open the door, remove 1 bolt (6) fixing the fender to the body, and remove the fender.



S6213946

Refit

1. Locate and adjust the fender.
2. Fix the fender to the body, do not tighten the bolts.
3. Adjust the gap between the fender and adjacent panels to ensure a uniform gap. Then tighten 6 bolts fixing the fender to the body to **7–10Nm**, and check the torque. And tighten 1 nut fixing the fender to the body to **7–10Nm**, and check the torque. Tighten 1 screw to **7–10Nm**, and check the torque.
4. Fit the acoustic pad of the fender.
5. Fit the front wheelhouse liner.

Front Wheelhouse Liner Refit

6. Fit 1 screw fixing the A/C air inlet grille assembly to the fender, tighten it to **2–3Nm**, and check the torque.
7. Fit the headlamp assembly.

Headlamp Assembly Refit

Front Module

Specifications

Torque

Description	Value
Bolt-intercooler to platform	4–6Nm
Bolt - head lamp bracket to body	7–10Nm
Bolt - head lamp bracket to MFE	7–10Nm
Bolt-Air conditioner pipe A bracket to Front-end module	7-10Nm
Bolt-Headlamp to body	3–5Nm

Service Procedures

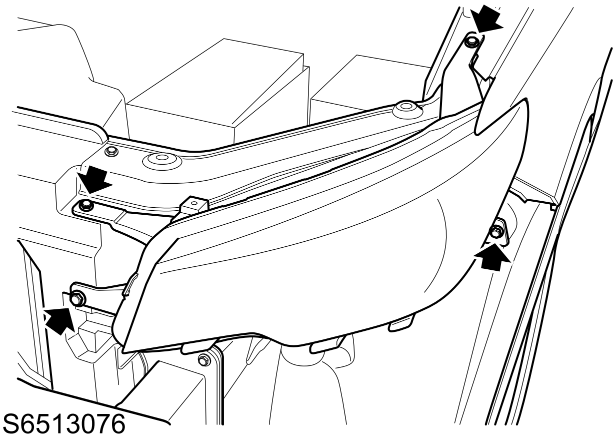
Front-end Module

Remove

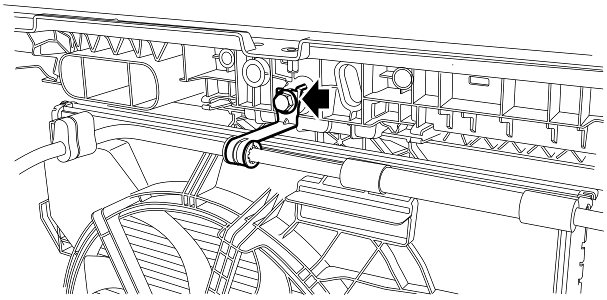
1. Remove the front bumper beam assembly.

☞**Front Bumper Beam Assembly Remove**

2. Remove the 4 bolts fit the headlamp to the body.


S6513076

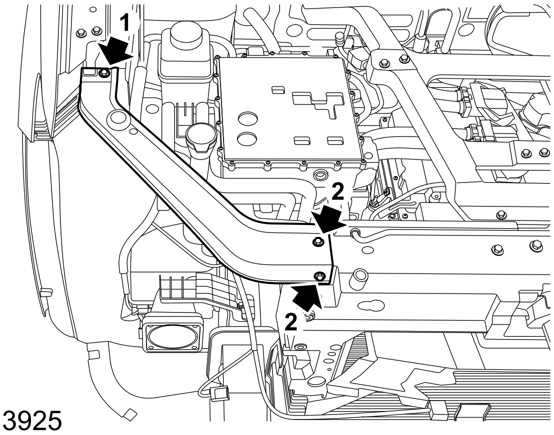
3. Remove the bonnet strut rod assembly.
4. Remove the bolt fixing the A/C Pipeline bracket to the front-end module.


S6213803

5. Remove the window washing reservoir filler pipe assembly

☞**Window Washing Reservoir Filler Pipe Assembly Remove**

6. Remove 1 bolt connecting the upper mounting panel of the right headlamp and the body and 2 bolts connecting the upper mounting panel of the right headlamp and the front-end module, and remove the upper mounting panel of the right headlamp.

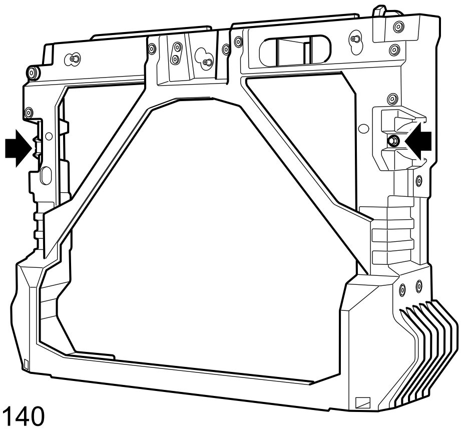


S5113925

7. Repeat the above steps to remove the upper mounting panel of the left headlamp.
8. Disconnect the bonnet lock release cable assembly from the lock assembly to remove the lock assembly.

☞**Bonnet Lock Assembly Remove**

9. Remove 2 screws connecting the front-end module to the radiator shock pad to separate the front-end module intercooler from the radiator, and remove the front-end module.


S6213140

Refit

1. Fix the front-end module to the intercooler and radiator, fit 2 bolts fixing the front-end module to the radiator shock pad, tighten them to **4–6Nm**, and check the torque.
2. Fit the bonnet lock assembly.

☞**Bonnet Lock Assembly Refit**

3. Fix the upper mounting panel of the right headlamp to the upper radiator beam and body, tighten 1 bolt connecting the upper mounting panel of the right headlamp and the body to **7–10Nm**, and check the torque. Tighten 2 bolts connecting the upper mounting panel of the right headlamp and front-end module to **7–10Nm**, and check the torque.
4. Repeat the above steps to fit the upper mounting panel of the left headlamp.

5. Fit the windshield washer reservoir filler pipe assembly.

☞**Windshield Washer Reservoir Filler Pipe Assembly Refit**

6. Refit the bolt fixing the A/C Pipeline bracket to the front-end module, tighten to**7-10Nm**, and check the torque.
7. Refit the bonnet strut rod assembly.
8. Fit the headlamp assembly, and fit 4 bolts, tighten to**3–5Nm**, and check the torque.
9. Refit the front bumper beam assembly.

☞**Front Bumper Beam Assembly Refit**

Bonnet

Specifications

Torque

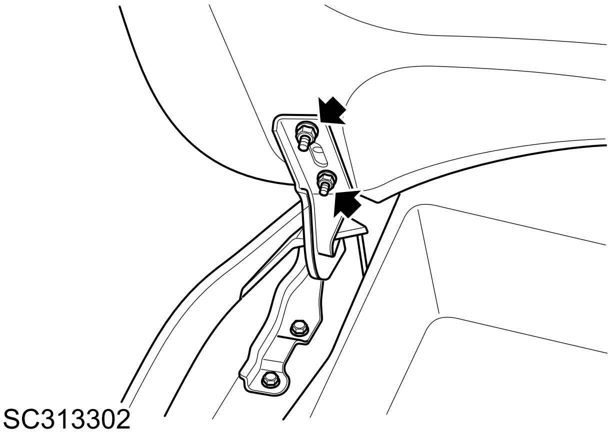
Description	Value
Nut - hood hinge to hood panel	19–25Nm
Bolt - bonnet hinge to body	19–25Nm
Bolt - hood latch to platform	7–10Nm
Bolt-From former bumper frame to body	3-4Nm
Screw - bonnet open handle	1.3–1.9Nm

Service Procedures

Hood Adjustment

Adjustment

1. Mark the hood hinges outer profile with a non-permanent marker.
2. Loosen 4 nuts fixing the cover panel of the left and right hinges to the engine hood.



3. Adjust the hood to keep a uniform gap between the hood and the front bumper upholstery, headlamp and front fender, and keep it flush with the front bumper upholstery, headlamp and front fender.
4. For gap information please refer to the "Body Size" of the "Body Panel and Paint" section.
5. Tighten the nut of the hinge cover panel to **19–25Nm** and check the torque.

Hood and Hinge Assembly

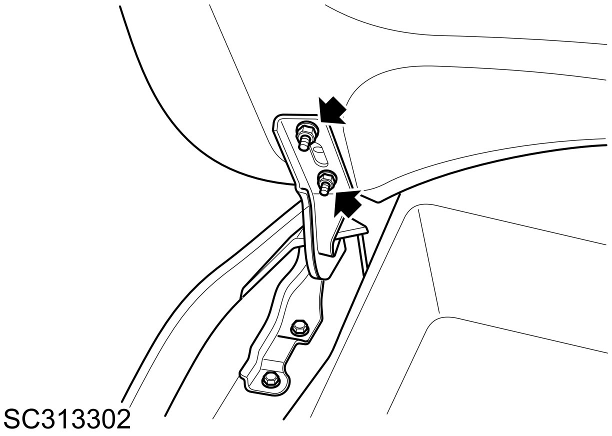
Remove

Warning: Take special attention to avoid vehicle damage and personal injury.

1. Open and support the hood properly.
2. Remove the A/C intake grille assembly.

A/C Intake Grille Assembly Remove

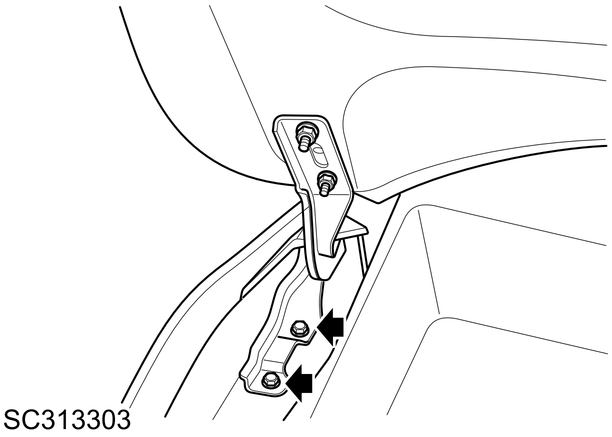
3. Mark the hinges position relative to the hood for positioning during installation.
4. Remove 4 nuts fixing the hood hinge on both sides to the engine hood.



5. With assistance, remove the engine hood.
6. Mark the hinges position relative to the hood for positioning during installation.
7. Remove the A/C intake grille assembly.

A/C Intake Grille Assembly Remove

8. Remove 4 bolts fixing the body hinge on both sides to the front body.



9. Remove hinges on both sides.

Refit

Warning: Bonnet will drop under its own weight during removal and refit, ensure panel is fully supported.

1. Locate the body hinge on both sides to the front body, and align it with the position marked when removing.

2. Fit 4 bolts fixing the body hinge on both sides to the front body, tighten the bolt to **19–25Nm** and check the torque.
3. With assistance, locate the engine cover to the vehicle， and align the hinge with the position marked when removing.

Caution: Take care not to damage the bonnet stub threads when inserting into the hinge.

4. Fit 4 nuts securing the hood and the hood hinge on both sides, but do not tighten to the specified torque.
5. Check if the hood is properly located, and carefully adjust the gap and surface difference between the hood and the front fender to meet DTS (dimension technical specification) requirements.
6. After adjustment, tighten 4 nuts to **19–25Nm** and check the torque.
7. Fit the A/C air intake grille assembly.

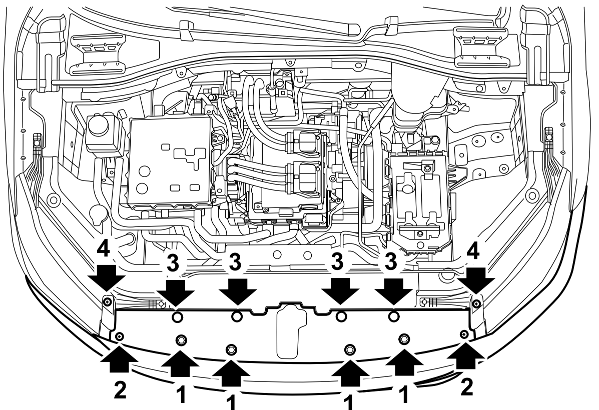
☞**A/C Air Intake Grille Assembly Refit**

8. Close the engine hood.

Bonnet Lock Assembly

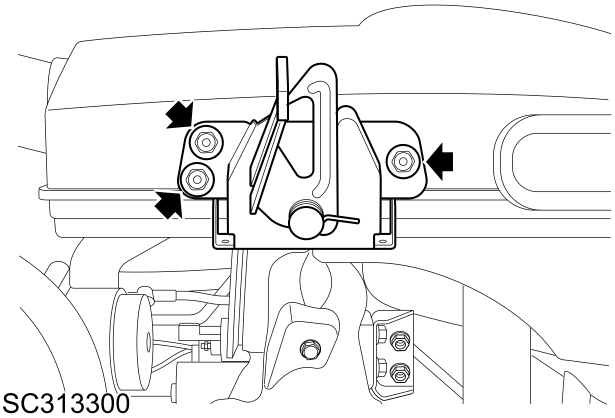
Remove

1. Open and support the bonnet firmly.
2. Remove 4 bolts （ 1 ）fitting front bumper cover to the front-end module, remove 2 bolts （ 2 ）fitting front bumper cover to the front bumper, loosen 4 clips （ 3 ）, remove 2 bolts （ 2 ）fitting front bumper cover to the headlamp, remove the front bumper cover.



S6213950

3. Mark the lock position on the front-end module bracket so that proper location can be found for refit.
4. Remove 3 bolts fixing the bonnet lock to the front-end module.



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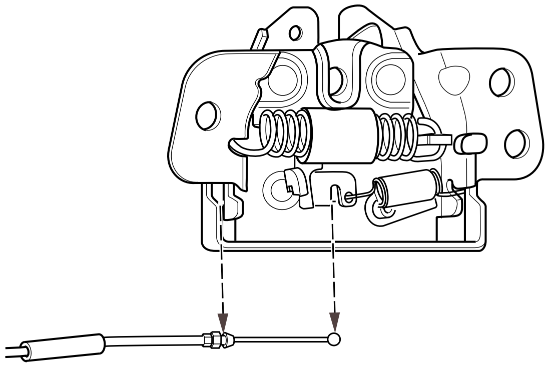
5. Disconnect the harness connector of the bonnet lock.
6. Disconnect the bonnet lock release cable assembly from the lock assembly to remove the lock assembly.



SC310002

Refit

1. Connect the lock end of the bonnet release cable assembly and the lock assembly firmly, i.e. fit the spherical end of the cable core wire into the hook slot of the bonnet lock, put the core wire into the long slot of the bonnet lock case, and align the circular groove of the main cable pipe connector with the mounting slot of the lock case, then press it hard until it clicks.
2. Locate the bonnet lock assembly to the front-end module, and align it with the position marked when removing.
3. Fit 3 bolts fixing the lock assembly to the front-end module, and do not tighten them to the specified torque at this step.
4. Close the bonnet, observe the relative position of the lock and striker, adjust the lock and allow the striker to enter into the lock tongue.
5. Connect the harness connector of the bonnet lock.
6. After adjustment, tighten the 3 bolts to **7–10Nm**, and check the torque.
7. Refit 4 bolts fitting front bumper cover to the front-end module, tighten to**3-4Nm**, and check the torque. Refit 4 clips firmly.
8. Refit 2 bolts fitting front bumper cover to the front bumper, tighten to**3-4Nm**, and check the torque.
9. Refit 2 bolts fitting front bumper cover to the headlamp, tighten to**3-4Nm**, and check the torque.
10. Close the bonnet.

Bonnet Release Cable

Remove

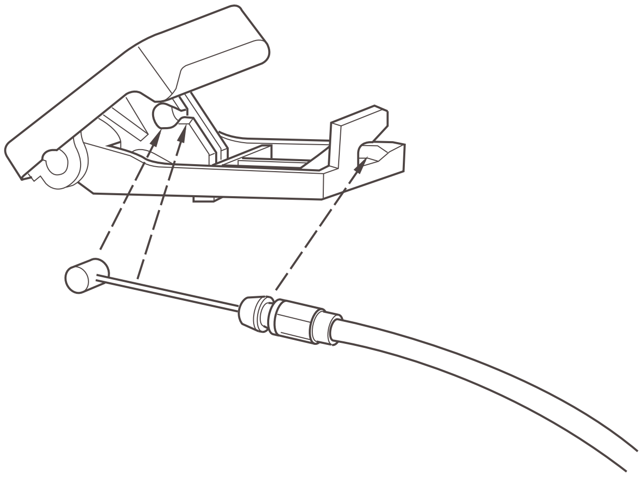
1. Open the bonnet and support it with a rod firmly.
2. Remove the bonnet lock assembly

Bonnet Lock Remove

3. Release the bonnet release cable assembly from the bonnet lock.
4. Loosen the clips fixing the bonnet release cables to the upper mounting panel of left headlamp and the body in sequence.
5. Release the bonnet release cable from the front compartment.
6. Release the bonnet release cable assembly from the release handle.
7. Pull out the bonnet release cable assembly from the front compartment.

Refit

1. Locate the front compartment cover release cable assembly in the front compartment, insert the flat blade end through the hole in the front compartment bulkhead from the front compartment into the driver compartment, and fix it into the bulkhead hole with the rubber seal ring of the cable assembly.
2. Insert the cylindrical end of the front compartment cover release cable assembly into the cylindrical hole in the release handle, place the core wire in the long slot of the handle, and align the cable sleeve connector with the mounting slot of the release handle, then press it hard until it clicks.



3. Fix the front compartment cover release cable to the front compartment and the upper mounting panel of left headlamp in sequence.
4. Fit the front compartment cover lock assembly.

Front Compartment Cover Lock Assembly Refit

5. Pull the front compartment cover release handle in the driver compartment, and check the opening effect of the front compartment cover.

Hood strut

Remove

Warning: Take special attention to avoid vehicle damage and personal injury.

1. Open and support the hood properly.
2. Directly remove the hood strut.

Refit

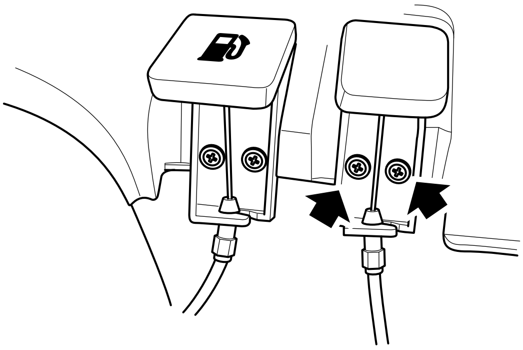
Warning: Bonnet will drop under its own weight during removal and refit, ensure panel is fully supported.

1. Fit the hood strut.
2. Close the engine hood.

Hood Release Handle

Remove

1. Lift the hood release handle.
2. Remove 2 retaining screws fixing the hood release handle.



SC310004

3. Release the hood release handle to remove the release handle.

Refit

1. Insert the cylindrical end of the hood release handle into the cylindrical hole of the release handle, place the core wire into the long slot of the handle, and align the cable protection pipe end with the mounting slot of the release handle, then press it hard until a "click" sound is heard.
2. Align the two round mounting holes on the hood release handle base with the two mounting holes on the driver lower trim panel, and align the square protrusion on the base with the square hole on the driver lower trim panel and make two mounting surfaces fit with each other.
3. Fit 2 self-tapping screws fixing the hood release handle to the driver lower trim panel, tighten to **1.3–1.9Nm** and check the torque.

Tailgate

Specifications

Torque

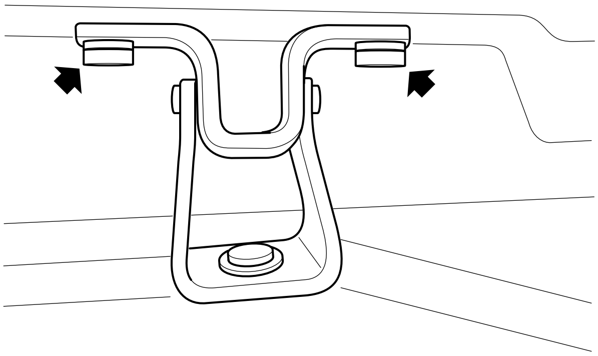
Description	Value
Bolt - Tailgate hinge to tailgate	7–10Nm
Nut - Tailgate hinge to body	26–34Nm
Bolt - Tailgate lock totailgate	19–25Nm
Bolt - tailgate striker to tailgate sill	19–25Nm
Bolt -Tailgate strut mounting bracket to body	7–10Nm
Bolt - Tailgate strut mounting bracket to tailgate	7–10Nm
Nut - Tailgate hand to tailgate	3.5–5Nm

Service Procedures

Tailgate Adjustment

Adjustment

1. Mark the tailgate hinge outer profile with a non-permanent marker.
2. Loosen 4 bolts fixing the cover panel of the left/right hinges to the tailgate.



S4353308

3. Adjust the tailgate to keep a uniform gap between the tailgate and the tail lamp and the rear bumper upholstery, and keep it flush with the tail lamp and rear bumper upholstery.
4. For gap information, please refer to the "Body Size" of the "Body Panel and Paint" section.
5. Tighten the hinge cover panel bolt to **7–10Nm** and check the torque.

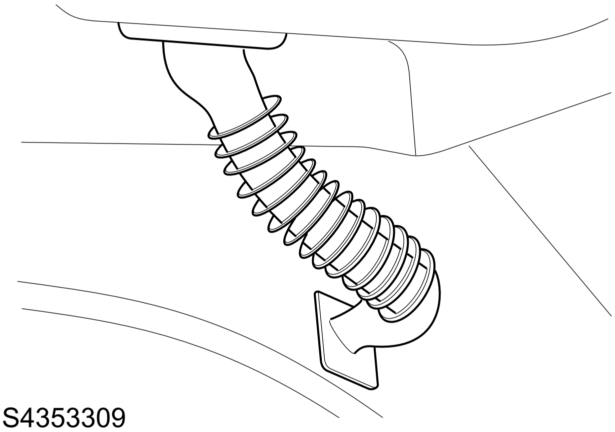
Tailgate and Hinge Assembly

Remove

1. Open the tailgate.
2. Disconnect the battery negative terminal.
3. Release the coat hanger cable from the tailgate hook.
4. Remove the tailgate interior trim panel assembly.

☞**Tail Gate Interior Trim Panel Remove**

5. Disconnect the rear window wiper motor harness connector.
6. Disconnect the tailgate lock body harness connector.
7. Disconnect the rear combination lamp harness connector.
8. Release the interface of the tailgate window resistance heater wire.
9. Release the harness sheath at both sides of the tailgate, draw the harness out from the tailgate cavity.



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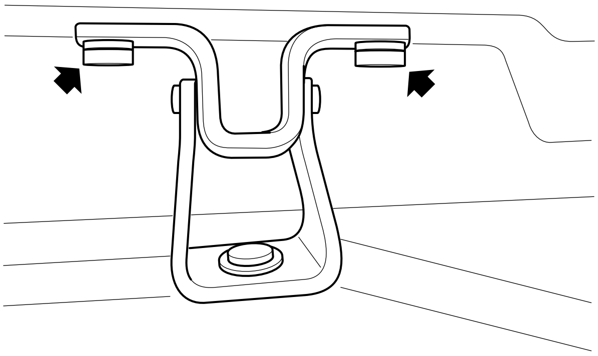
10. With assistance, remove 4 bolts fixing both hinges to the tailgate. If it is required to refit the tailgate, a reference position shall be marked on the hinge.



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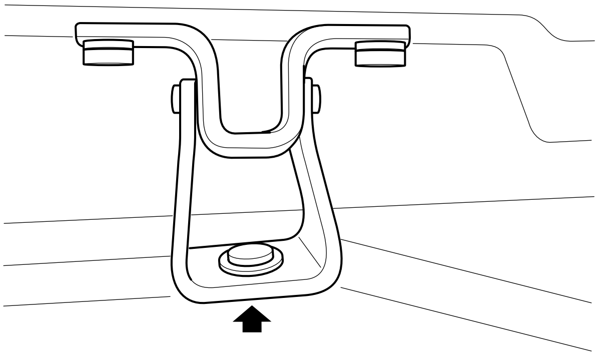
Warning: Due to physical size and weight of the tail gate. Please ensure that the tail gate is supported correctly before carrying out any repairs or modifications. Please take care to minimise the risk of personal injury or damage to the vehicle whilst work is carried out.

11. Carefully pry up the steel spring piece on left and right gas springs to pull the piston ball head socket from the tailgate ball head. Remove the tailgate assembly.

Warning: Due to physical size and weight of the tail gate. Please ensure that the tail gate is supported correctly before carrying out any repairs or modifications. Please take care to minimise the risk of personal injury or damage to the vehicle whilst work is carried out.

12. Mark the tailgate hinge position on the vehicle body with a non-permanent marker.
13. Release the roof interior trim panel at the tailgate end to access the nut fixing the tailgate hinge.
14. Remove 2 nuts securing the left and right tailgate hinges to the body.



S4353311

Warning: Due to physical size and weight of the tail gate. Please ensure that the tail gate is supported correctly before carrying out any repairs or modifications. Please take care to minimise the risk of personal injury or damage to the vehicle whilst work is carried out.

15. Remove the tailgate hinge assembly.

Refit

1. Locate the tailgate hinge assembly to the marked mounting location on the body.
2. Fit 2 nuts fixing the left and right tailgate hinges to the body, tighten the nut to **26–34Nm** and check the torque.
3. Fit the roof interior trim panel (at the tailgate end).
4. With assistance, locate the tailgate to the vehicle body and align it with the relative mark.
5. Fit the bolt fixing the hinge to the tailgate, but do not tighten it to the specified torque.

Warning: Due to physical size and weight of the tail gate. Please ensure that the tail gate is supported correctly before carrying out any repairs or modifications. Please take care to minimise the risk of personal injury or damage to the vehicle whilst work is carried out.

6. Check if the fit clearance and surface difference between the tailgate and the body side wall panel and quarter panel meet the DTS (dimension technical specification) requirements. After adjustment, tighten 4 bolts to the specified torque of **7–10Nm** and check the torque.
7. Press hard the ball head sockets of the gas spring pistons at both sides into the ball head of the tailgate side panel, till a "click" sound is heard, which indicates that they are fitted in place, and clamp the steel piece.
8. Fit the harness into the tailgate cavity, and fit the harness sheath at both sides of tailgate.
9. Release the interface of the tailgate window resistance heater wire.
10. Connect the rear combination lamp harness connector .
11. Connect the tailgate lock body harness connector .
12. Connect the rear window wiper motor harness connector.
13. Fit the tailgate interior trim panel.

☞**Tail Gate Interior Trim Panel Remove**

14. Connect the coat hanger cable to the tailgate hook.
15. Connect the battery negative terminal.

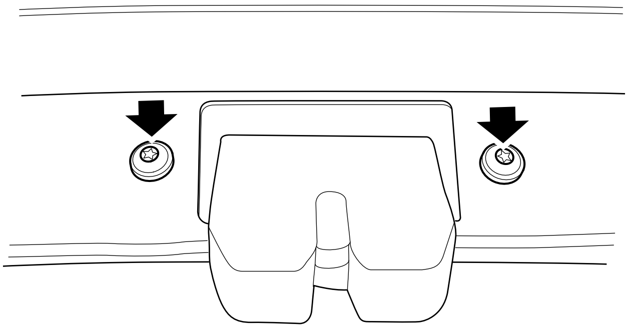
Tailgate Lock Catch Assembly

Remove

1. Disconnect the battery negative terminal after unlocking the tailgate.
2. Open the tailgate.
3. Remove the tailgate interior trim panel assembly.

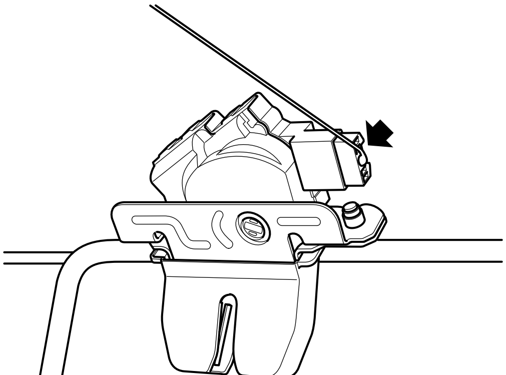
☞**Tail Gate Interior Trim Panel Remove**

4. Remove 2 bolts fixing the tailgate lock catch to the tailgate.



SC213103

5. Remove the tailgate lock catch sleeve.
6. Disconnect the lock catch harness connector.



S4353306

7. Remove the tailgate lock body.

Refit

1. Locate the tailgate lock body to the tailgate sheet metal through the tailgate cavity.
2. Connect the harness connector.
3. Fit 2 bolts fixing the tailgate lock body to the tailgate, but do not tighten bolts.
4. Check and adjust the fit clearance and the surface distance between the tailgate lock body and the surrounding sheet metals, then tighten the lock body retaining bolt to **19–25Nm** and check the torque.
5. Push the tailgate lock body sleeve into the lock until a "click" sound can be heard, which indicates it is fitted in place.
6. Fit the interior trim panel of the tailgate.

☞**Tail Gate Interior Trim Panel Remove**

7. Connect the battery negative terminal.

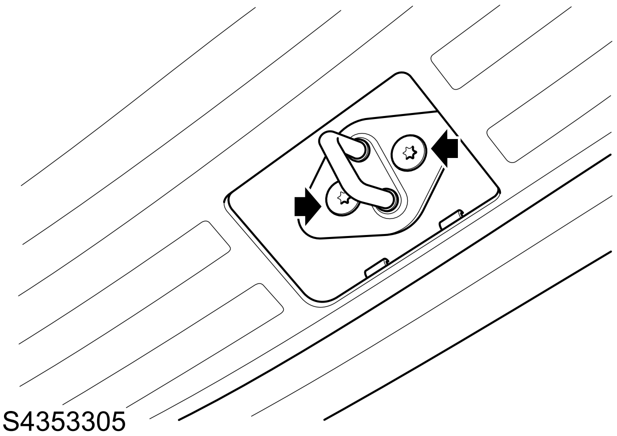
Tailgate Lock Catch

Remove

1. Open the tailgate.
2. Remove the trunk sill trim panel.

Trunk Sill Trim Panel Refit

3. Mark the tailgate lock Striker relative to the quarter panel.
4. Remove 2 screws fixing the tailgate lock Striker to the quarter panel.



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5. Remove the tailgate lock Striker.

Refit

1. Pre-tighten the tailgate lock striker according to marks of the tailgate lock striker and the quarter panel.
2. Open/close the tailgate repeatedly, check and adjust the fit clearance and surface difference between the tailgate and the surrounding sheet metals by moving the bottom panel of the lock striker.
3. Make sure that the tailgate lock is fully locked.
4. Tighten the bolt securing the lock striker to the quarter panel to the torque of **19–25Nm** and check the torque.
5. Refit the trunk sill trim panel.

Trunk Sill Trim Panel Refit

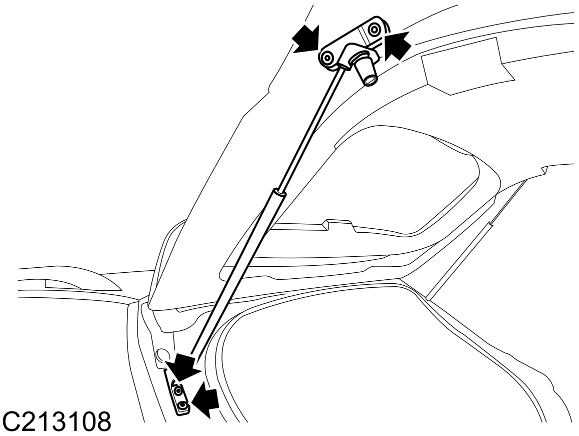
Tailgate Gas Strut and Mounting Bracket

Remove

1. Open the tailgate, and when removing, make sure it is securely supported.

Warning: Due to physical size and weight of the tail gate. Please ensure that the tail gate is supported correctly before carrying out any repairs or modifications. Please take care to minimise the risk of personal injury or damage to the vehicle whilst work is carried out.

2. Carefully pry up the steel spring piece on both sides of the left gas spring, and pull the ball head socket on the end of piston from the tailgate ball head.
3. Then pull the ball head socket of the gas strut sleeve from the ball head on the left body bracket.
4. Repeat steps 2-3 to remove the right gas strut.
5. Remove 2 bolts fixing the tailgate gas strut mounting bracket to the body.
6. Remove 2 bolts securing the tailgate gas strut mounting bracket to the tailgate, and remove the tailgate gas strut mounting bracket.



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Refit

1. Align the left gas spring mounting bracket with holes on the trunk and the tailgate respectively.
2. Fit 2 screws securing the tailgate gas spring mounting bracket to the body, tighten to **7–10Nm** and check the torque.
3. Fit 2 screws securing the tailgate gas spring mounting bracket on the tailgate, tighten to **7–10Nm** and check the torque.
4. Align the ball head socket on the gas spring sleeve with the ball head on the left bracket, and make sure the gas spring piston is downward.
5. Hold the sleeve, push the ball head socket into the ball head with thumb. If the two parts are fitted well, a "crack" sound will be heard.

Caution: To avoid damaging the airtightness of the air spring, never hold the centre of the air spring and laterally apply force to it by hand.

6. Align the ball head socket on the left gas spring piston end with the ball head on the tailgate interior panel. Hold the end of the piston, push the ball head socket into the ball head with thumb. If the two parts are fitted well, a "crack" sound will be heard.
7. Refit the steel spring piece on both sides of the gas spring ball head socket, and ensure it is properly located in the spring piece slot.
8. Repeat steps 1-6 to fit the right tailgate gas spring.
9. Close the trunk lid.

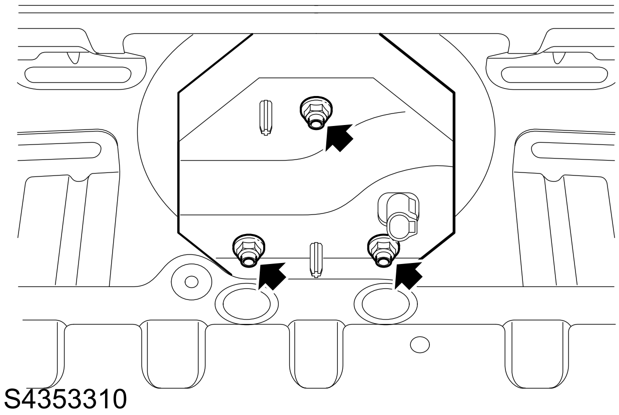
Tailgate Exterior Handle

Remove

1. Open the tailgate.
2. Disconnect the battery negative terminal.
3. Remove the tailgate interior trim panel.

☞**Tail Gate Interior Trim Panel Remove**

4. Disconnect the tailgate switch harness connector, remove 3 nuts fixing the tailgate switch, and remove the tailgate switch.



Refit

1. Locate the tailgate switch on the tailgate, and connect the tailgate switch harness connector. Install 3 nuts fixing the tailgate switch, tighten to **3.5–5Nm** and check the torque.
2. Fit the interior trim panel of the tailgate.

☞**Tail Gate Interior Trim Panel Remove**

3. Connect the battery negative terminal.
4. Close the tailgate.

Tailgate Upper Trim Panel

Remove

1. Open the tailgate.
2. Pry 2 clips on the tailgate upper trim panel, and remove the tailgate upper trim panel.

Refit

1. Locate the tailgate upper trim panel on the tailgate, and flap clips in place.
2. Close the tailgate.

Charger Filler Flap

Specifications

Torque

Description	Value
Screw-Door of charging to front bumper	1.4–1.8Nm

Service Procedures

Charging Port Door Assembly

Remove

1. Disconnect the negative battery cable.
2. Turn off the ignition key and wait for more than 5 min before removing.

Caution: Please wait 5 minutes after the vehicle power system has been switched off to allow any power stored within the PEB capacitors to have been discharged.

3. Remove the front bumper assembly.

☞**Front Bumper Remove**

4. Remove 12 screws fixing the charging port door to the front bumper, and remove the charging port door.

Refit

1. Fix the charging port door to the front bumper, fit 12 screws, tighten them to **1.4–1.8Nm**, and check the torque.
2. Fit the front bumper assembly.

☞**Front Bumper Refit**

3. Connect the negative battery cable.

Body Control Module

Specifications

Torque

Description	Value
Bolt-Body control module to Body	5–7Nm

Service Procedures

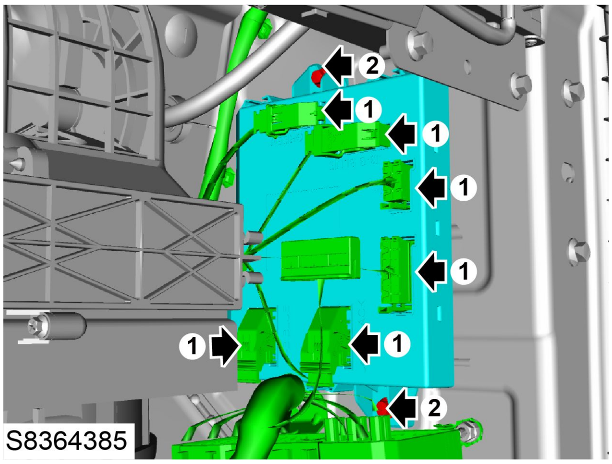
Body Control Module (BCM)

Remove

1. Disconnect the battery negative cable.
2. Remove the glove box assembly.

☞**Glove Box Assembly Remove**

3. Disconnect the harness connector (1) of the **BCM**.
4. Remove 2 bolts (2) fixing the **BCM** to the vehicle body.



5. Remove the **BCM**.

Refit

1. Connect the harness connector of the **BCM**.
2. Connect the battery negative cable.
3. Programme and encode the **BCM**. Refer to Module Self-learning and Programming Manual, "**BCM** Self-learning".
4. Fix the BCM to the body, fit 2 bolts, tighten them to **5–7Nm**, and check the torque.
5. Fit the glove box assembly

☞**Glove Box Assembly Refit**

Horn

Specifications

Torque

Description	Value
Bolt-Horn to body	19–25Nm

Service Procedures

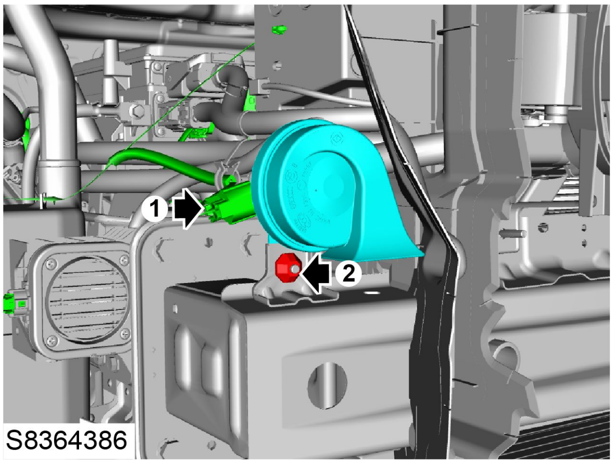
Horn

Remove

1. Disconnect the negative battery cable.
2. Remove the front bumper assembly.

☞**Front Bumper Assembly Remove**

3. Disconnect the tweeter/woofer harness connector (1).
4. Remove 2 nuts (2) fixing the tweeter/woofer to the body.



5. Remove tweeter/woofer horns.

Refit

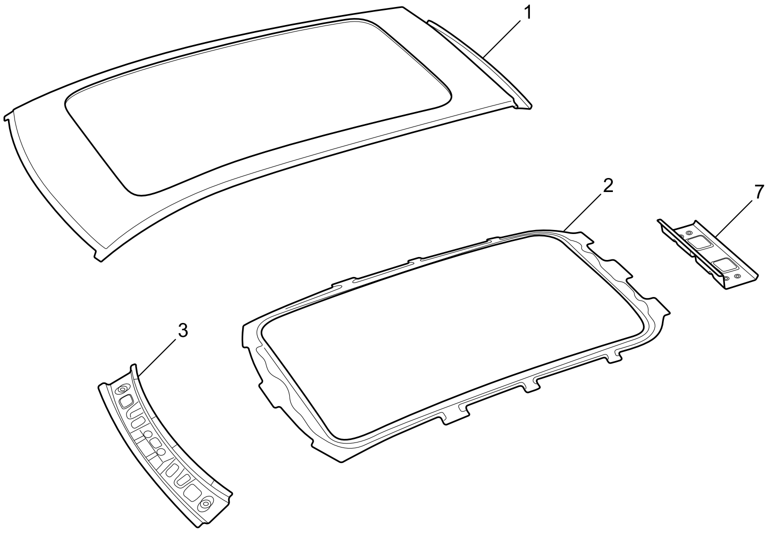
1. Fix the tweeter/woofer to the body, fit 2 nuts, tighten them to **19–25Nm**, and check the torque.
2. Connect the harness connector.
3. Fit the front bumper assembly.

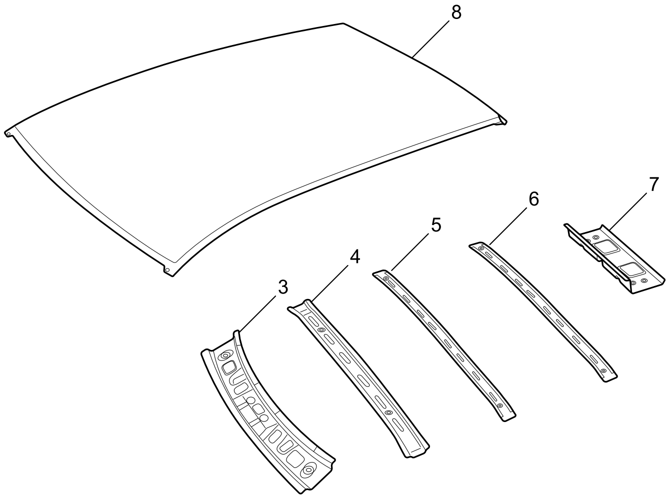
☞**Front Bumper Assembly Refit**

4. Connect the negative battery cable.

Panel Repair

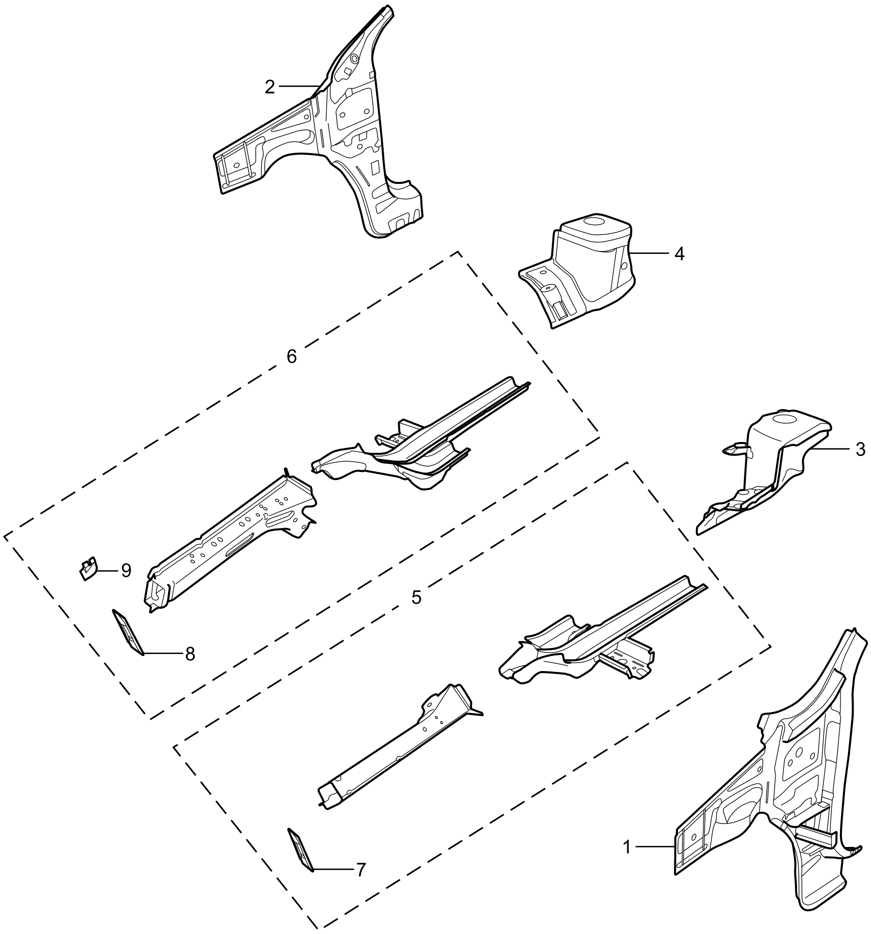
Roof Panel





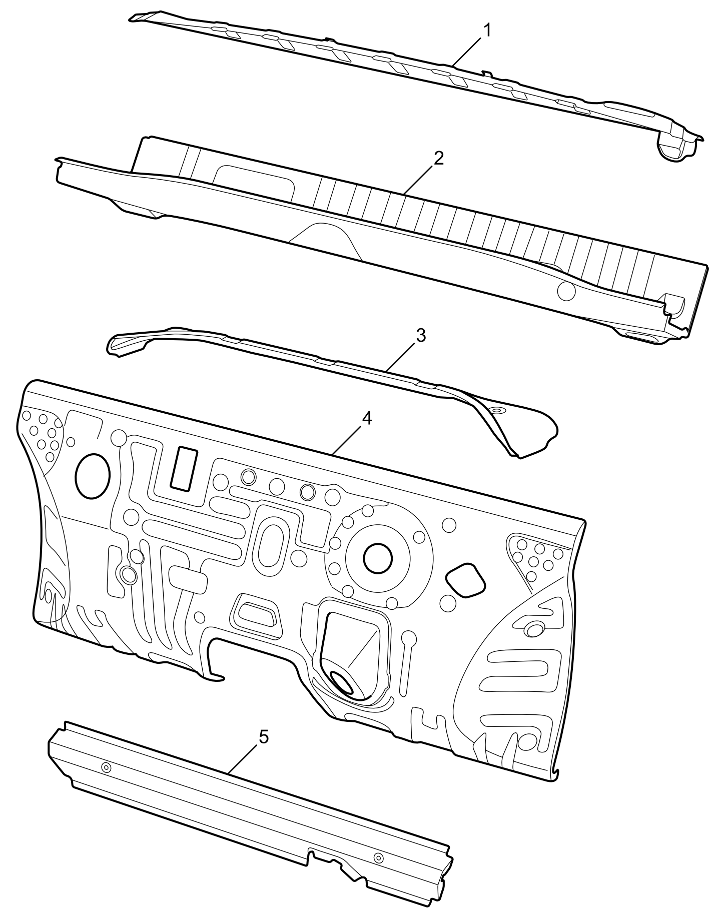
1. Roof Panel - Sunroof
2. Sunroof Reinforcement Assembly
3. Roof Front Beam Assembly
4. Roof 1st Intermediate Beam
5. Roof 2nd Intermediate Beam
6. Roof 3rd Intermediate Beam
7. Roof Rear Beam Assembly
8. Roof Panel - Without Sunroof

Front Compartment Cover Panel



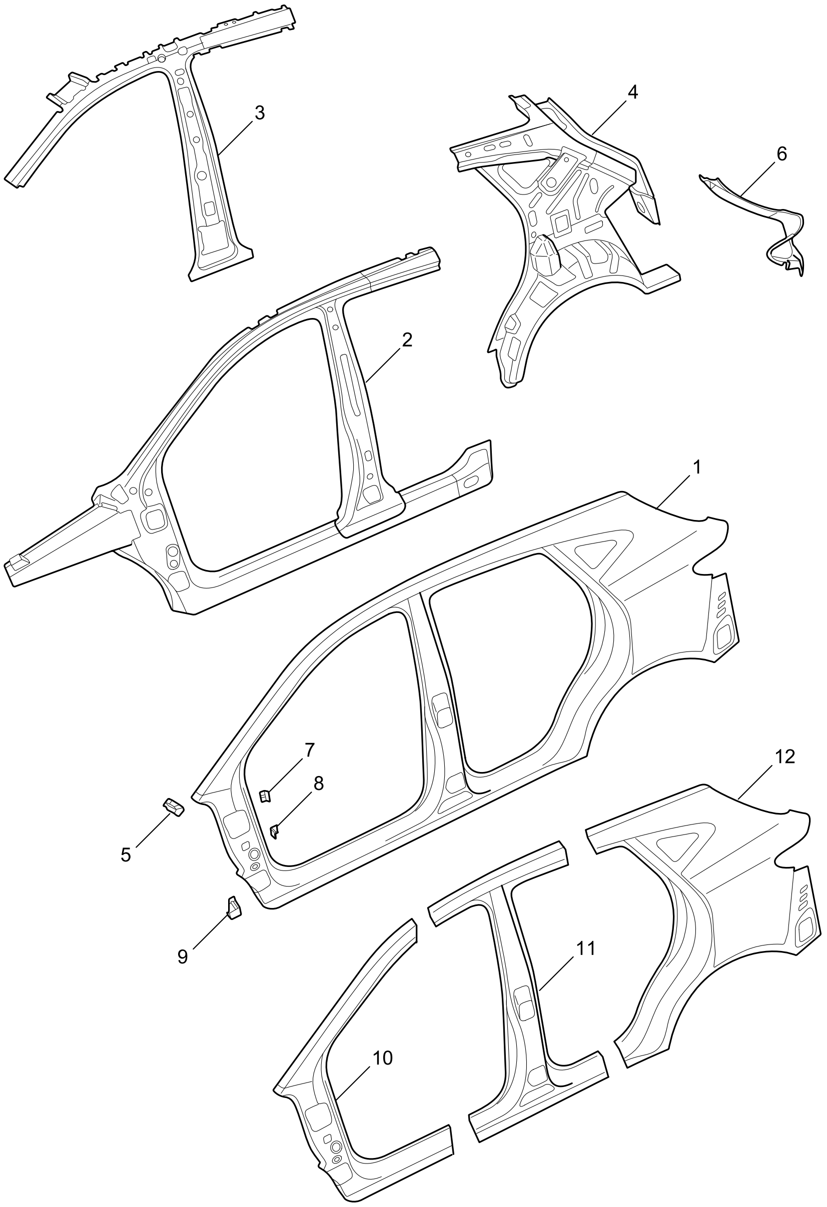
1. Left Dash Panel Side Panel Assembly
2. Right Dash Panel Side Panel Assembly
3. Front Left Wheelhouse Liner Assembly
4. Front Right Wheelhouse Liner Assembly
5. Left Front Longitudinal Beam Assembly
6. Right Front Longitudinal Beam Assembly
7. Left Front Bumper Mounting Bracket Assembly
8. Right Front Bumper Mounting Bracket Assembly
9. Washer Fluid Reservoir Bracket Assembly

Dash Panel



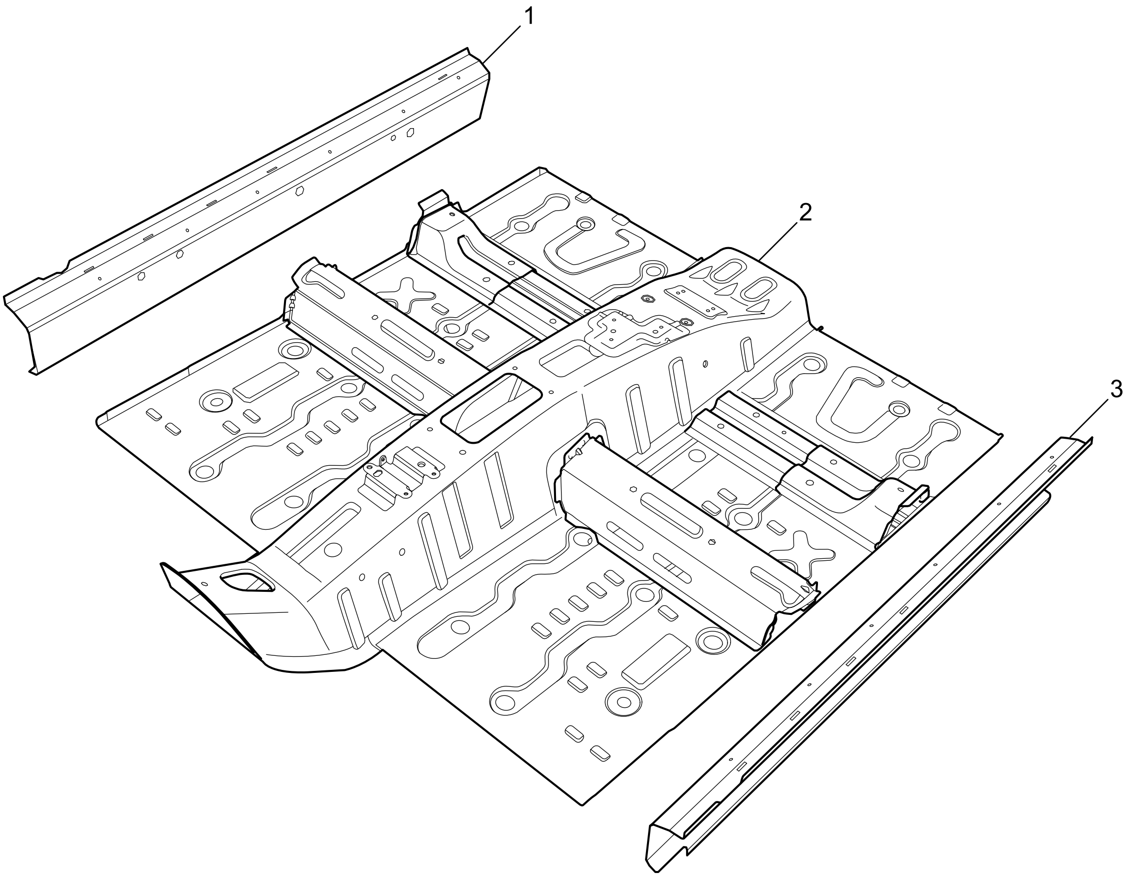
1. Dash Panel Upper Panel Assembly
2. Dash Panel Lower Panel Assembly
3. Dash Panel Upper Beam Assembly
4. Dash Panel Assembly
5. Dash Panel Lower Beam Assembly

Bodyside Panel



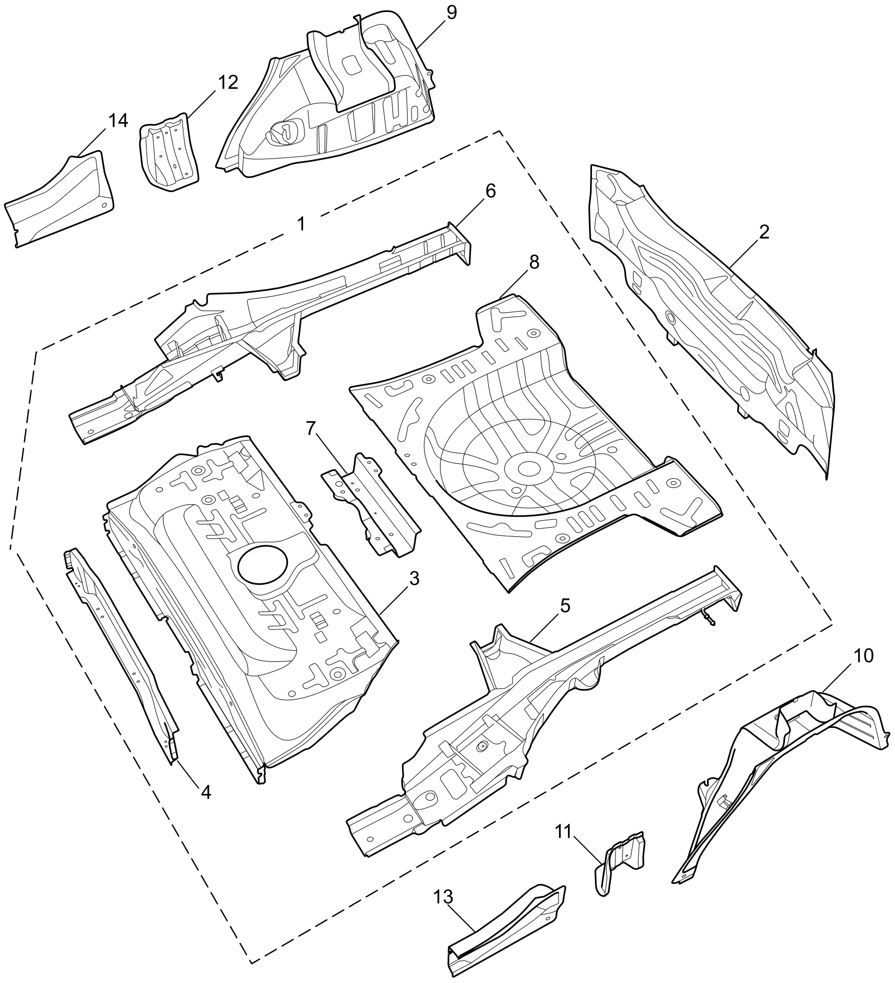
1. Bodyside Outer Panel
2. A Pillar Reinforcement Panel Assembly
3. B/C Pillar Closing Panel Assembly
4. Rear Bodyside Inner Panel Assembly
5. A Pillar Upper Closing Panel Assembly
6. Drain Channel Extension Panel Assembly
7. Fender Bracket
8. Fender Bracket
9. Fender Bracket
10. Front Bodyside Outer Panel
11. Middle Bodyside Outer Panel
12. Rear Bodyside Outer Panel

Front Floor



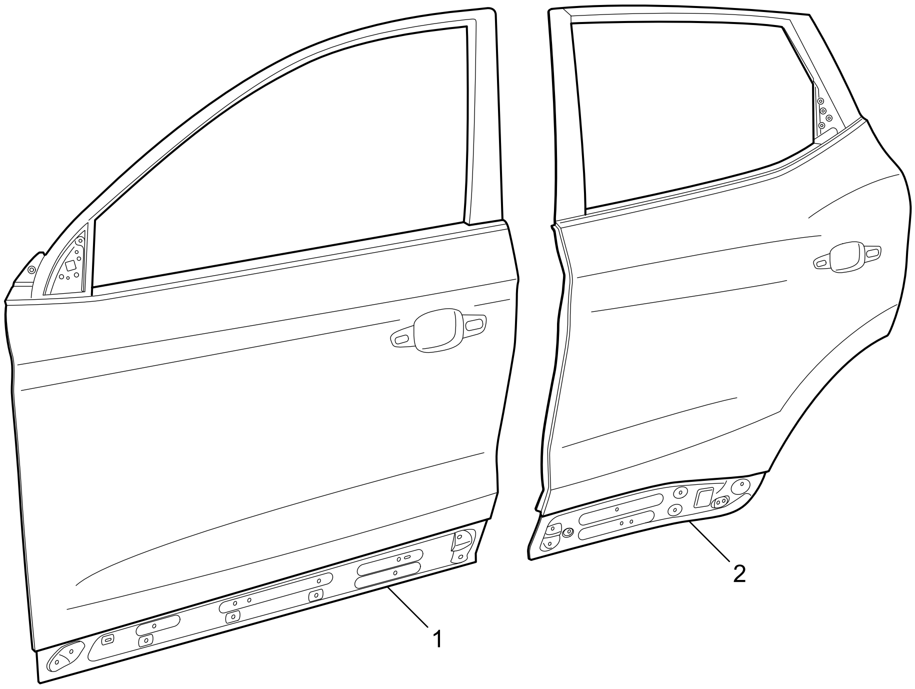
1. Right Doorsill Inner Panel Assembly
2. Front Floor Assembly
3. Left Doorsill Inner Panel Assembly

Rear Floor



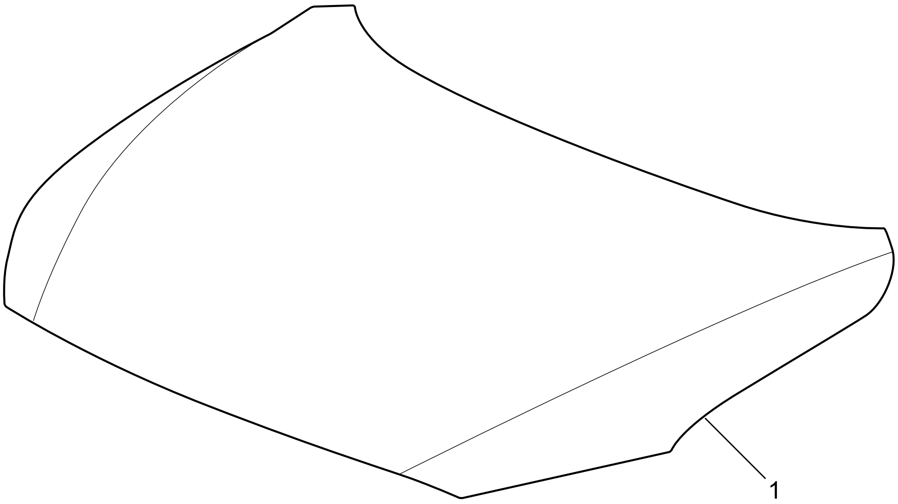
1. Rear Floor Assembly
2. Rear End Panel Assembly
3. Rear Seat Plate Assembly
4. Heel Board Beam Assembly
5. Left Rear Longitudinal Beam Assembly
6. Right Rear Longitudinal Beam Assembly
7. Rear Floor Beam Assembly
8. Spare Tyre Compartment Assembly
9. Rear Left Wheelhouse Assembly
10. Rear Right Wheelhouse Assembly
11. Rear Left Wheelhouse Support Plate Assembly
12. Rear Right Wheelhouse Support Plate Assembly
13. Rear Left Door Sill Extension Panel
14. Rear Right Door Sill Extension Panel

Door Panel Assembly



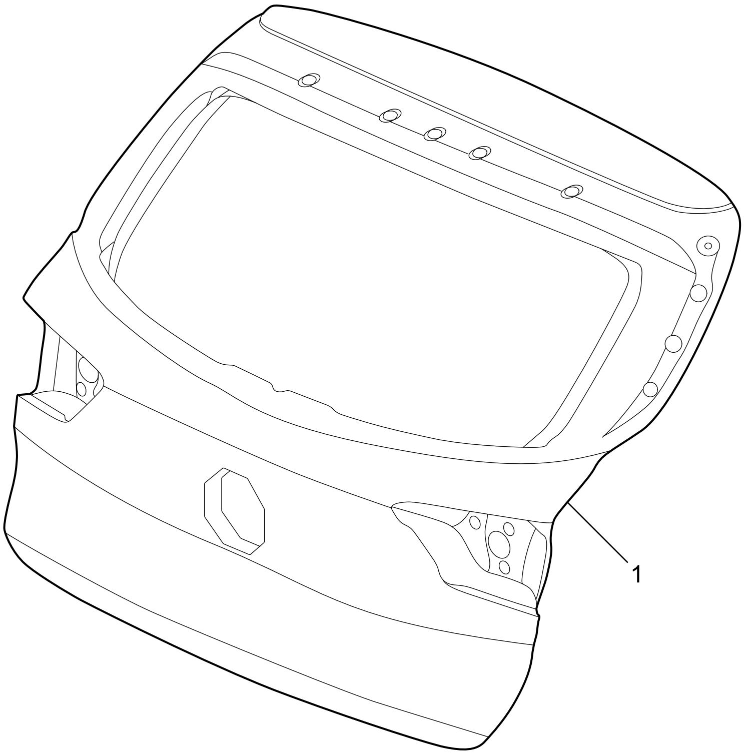
1. Front Door Assembly
2. Rear Door Assembly

Front Compartment Cover Panel Assembly



1. Front Compartment Cover Panel Assembly

Tailgate Sheet Metal Assembly

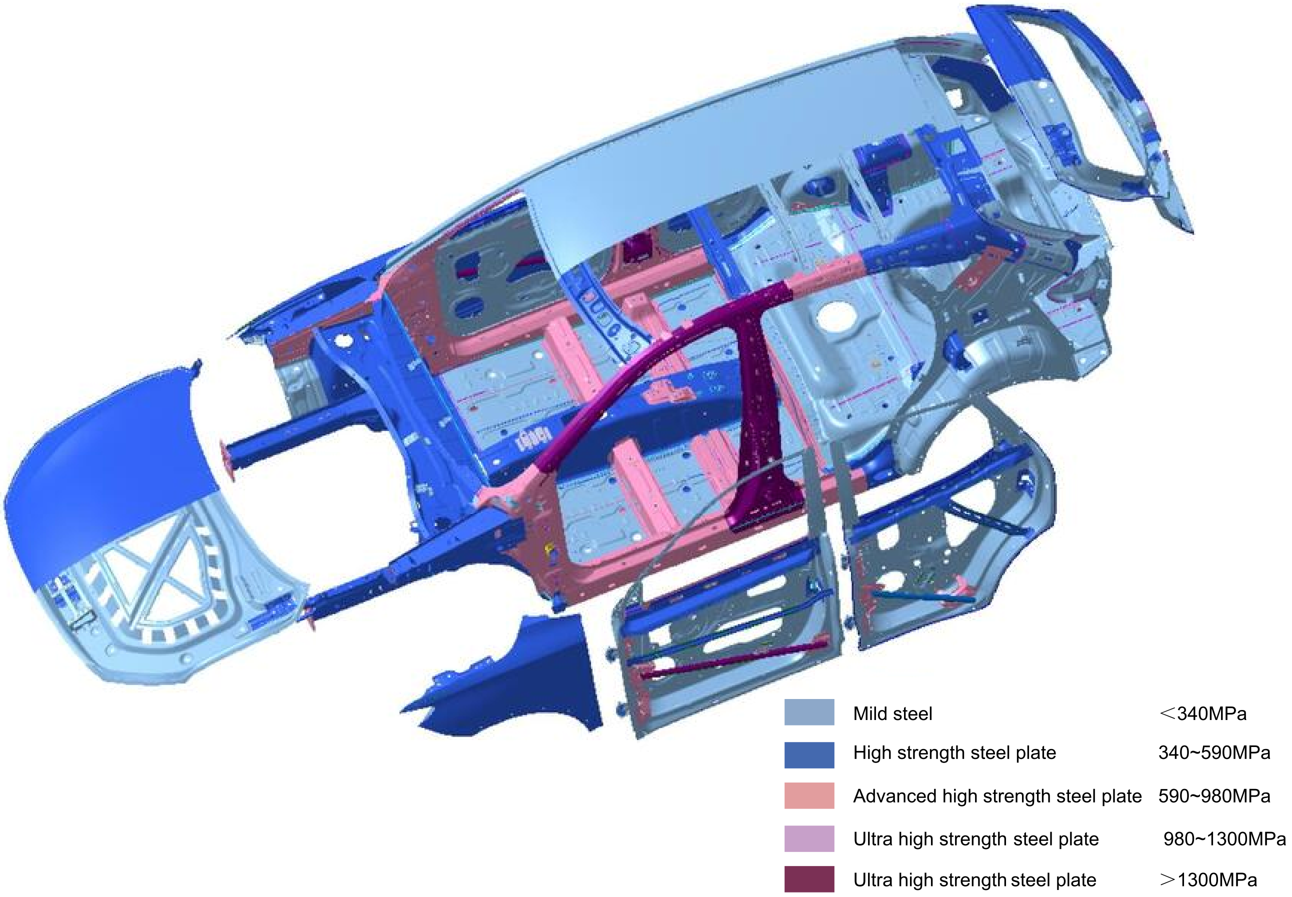


1. Tailgate Sheet Metal Assembly

Collision Repair

Body Material

According to the strength requirement for different location of the body, different high strength steel sheet and ultra high strength steel sheet (hot forming steel sheet) are used on the vehicle, the specific location of different materials is as follows:


Mild steel <340MPa
High strength steel plate 340~590MPa
Advanced high strength steel plate 590~980MPa
Ultra high strength steel plate 980~1300MPa
Ultra high strength steel plate >1300MPa

Only repair specified by the manufacturer's Service Manual is permitted, use the modernized inverter technology to repair the extra high strength steel sheet and hot forming steel sheet.

When repairing the galvanized steel sheet, observe the following points:

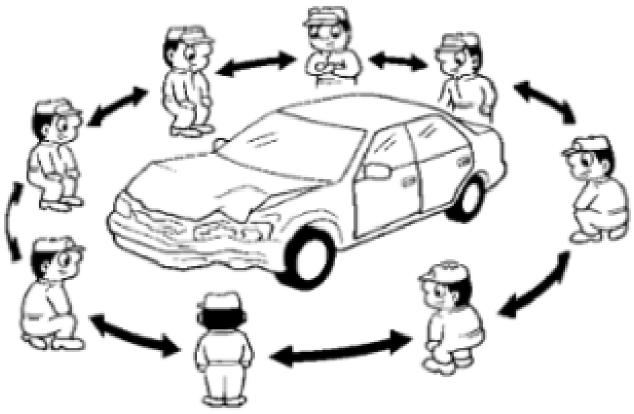
- Thoroughly remove the paint coat and zinc coating before grinding, grind with great care;
- Before spot welding, the paint for spot welding shall be applied between the contact surfaces for welding (use brush or spray);
- The electrode will absorb the particle on the surface, so the tip of the electrode shall be cleaned on a regular basis.

Damage Diagnosis

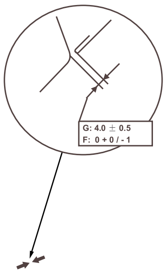
Damage detection

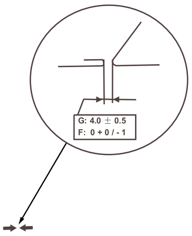
During the damage detection, it is required to visually estimate the collided position, determine the collision direction and magnitude of collision force, and check the possible damage. For the vehicle damaged in an accident, it is required to ask about the speed at the moment when the accident takes place, and the position, direction and angle to the crash or rollover to grasp the impact form, position, angle, etc of the collided vehicle and intuitively determine the position damaged by the collision and the area that may be affected. A comprehensive inspection can also be conducted to the vehicle in combination with test drive and measuring equipment to confirm whether the underbody is deformed, whether the body suffers from overall damage and overall skew, whether the door can be opened smoothly, etc to determine the extent of damage and repair method.

1. Visual inspection to the vehicle



2. Visual inspection to the specific position



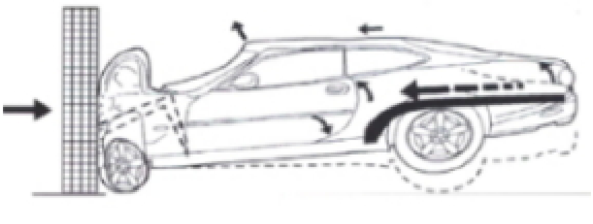


Identify all damaged positions

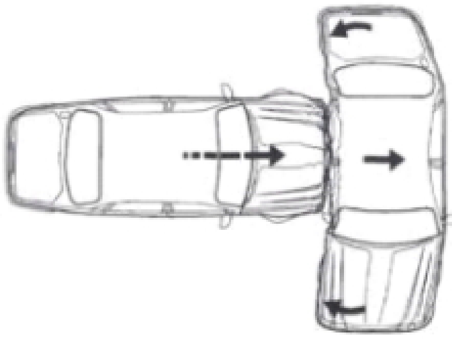
After a vehicle is collided, beyond the deformation damage from the collided position, its entire body, including frame, suspension, motor and other parts, may also be deformed. During the detection, it is required to check all damages of the related parts along the collided route system till there has been no trace of damage and those to the surrounding area.

Characteristics of body damage:

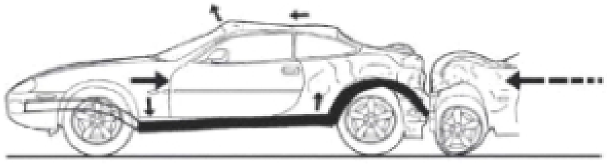
- Characteristics of front collision damage



- Characteristics of middle collision damage



- Characteristics of rear collision damage



Measurement of the damaged position

Accurate measurement is one of the procedures required to successfully perform a variety of collision repairs. For the integral body, the measurement is even more important for successful damage repair, because most of the steering and suspension systems are fitted on the vehicle body while some suspension systems are designed according to the assembly requirements. To guarantee the correct steering and driving operation performance of the vehicle, the fit tolerance of the key processing dimensions should be controlled within the allowed range.

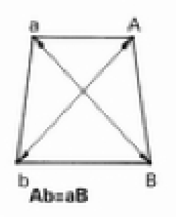
The measurement work should be carried out in conjunction with the disassembly work, or it will be unable to accurately identify all the damages. To facilitate the body maintenance and thorough damage inspection while avoid unnecessary damage caused by the maintenance to the disassembled parts, it is required to disassemble the related parts. The disassembly should follow the principle to minimize damage and destruction of the parts.

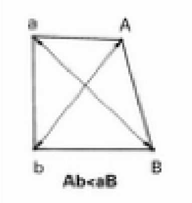
Selection of measuring point

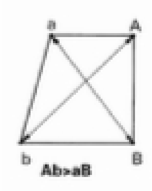
- Screw hole and process hole for parts installation;
- Lap point of body steel plates;
- Machining gap or raised impression on steel plate.

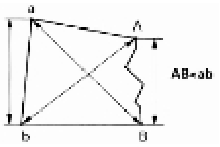
Measuring methods:

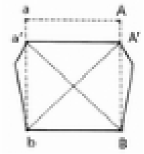
- Distance measuring method: it is the simplest and most practical measuring method employing a steel tape to measure the distance from each component to the datum point.











- Centering gauge method: measure with the centering gauge.
- Three-dimensional coordinate measuring method: measure the three-dimensional coordinate data of the selected measuring point, and then compare them with the original vehicle data to determine the body damage.
- Electronic measuring: more accurate and more effective.

Main reasons accounting for the measuring error of body size:

The error caused by accuracy of the measuring tool or equipment itself;

The error caused by human factors:

- Failure to accurately locate position of the measuring point;
- Failure to select a correct measuring method;
- Failure to use the measuring tool and equipment in a correct manner.

Precautions for measurement:

- Adjust the body to the horizontal position before the measurement;
- Mark measuring points on the body to prevent messing up the points during the measurement;
- Conduct the measurement in an accurate manner;
- Repeat the measurement for several times;
- Verify all measuring results repeatedly.

Confirmation of Maintenance Scheme

Underbody correction

When the car is severely damaged, involving deformation of the underbody, there is no need to replace the body and it is required to conduct underbody correction in the first place. Completion of the underbody correction can guarantee three-dimensional position of the underbody and overall position of the body, determine placement position of the motor assembly and front suspension, and restore positioning angle of the wheel and positioning of other assemblies. The body panel metal repair should be carried out after completion of the underbody correction.

Correction of body and its covering part

When the body and its covering part only suffer from repairable depressed deformation and minor damage in a collision, there will be no need for part replacement while it is required to adopt a correction method to restore their original shapes.

Panel replacement

For a certain position of the body or a part suffering from multiple breakages, when the damage/corrosion has reached a certain degree, making the repair meaningless or the required technical standards and functional requirements unable to be reached after repair, the damaged panel should be replaced.

Body replacement

When it is determined as that the body is irreparable, because the car is seriously damaged, making the entire body almost smashed up, the underbody severely deformed, and the two sides, roof, front compartment cover, and trunk deck almost completely destroyed, the vehicle body can be replaced as required by the user. Remove all serviceable assemblies and parts from the damaged car, and then conduct thorough check and repair to the principal assemblies of motor, etc. Replace the body assembly with a new one and all the parts requiring substitution, and then conduct re-assembly in accordance with the vehicle assembly process.

Partial replacement of body

When the vehicle is partially damaged in a collision, for example, when the front/rear fender, door, front compartment cover, or trunk deck is damaged, partial replacement can be employed to the body to achieve the purposes of trouble saving, time saving, and cost saving.

Replacement of body pillar

When the body pillar, front windshield pillar, or front/rear wall pillar is beyond repair after being seriously damaged, it can only be replaced. Only after the deformation of a large area is restored can a regular pillar of the same shape can be installed as a substitute.

Body Correction

The purpose of body correction is to recover the correct position and size of the sheet metal by eliminating the deformation (plastic deformation) and residue stress caused by collisions.

Introduction of Correcting Equipment

The correcting equipment shall provide the following features:

- The equipment shall have high-strength body positioning device and fixture.
- It shall have a service puller with various shapes and different functions that can meet the repair requirements for different locations.
- Be able to perform multipoint and comprehensive correction/drawing.
- Be able to accurately measure and detect the deviation and repair error for each reference point.

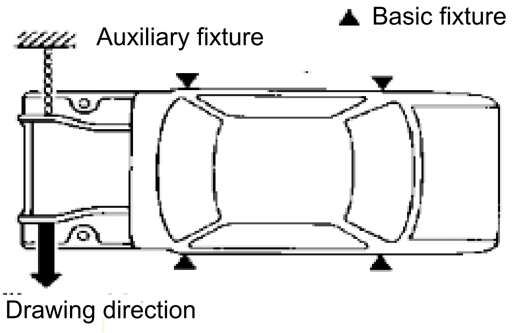
Operation Process for Correcting Equipment

Regardless of the type of the equipment used, its operation is broadly divided into the following 4 steps:

1. Get on the vehicle.
2. Position, clamping.
3. Drawing.
4. Measurement.

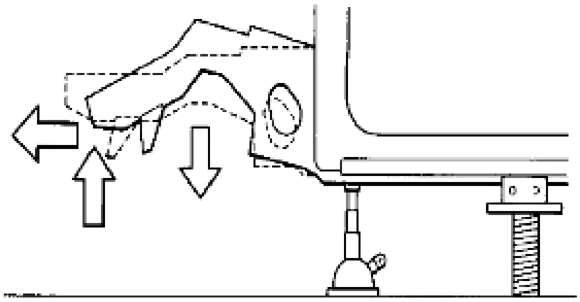
Auxiliary fixture:

- Prevent motion of the vehicle;
- Force caused by even and disperse drawing;



Auxiliary support:

- Prevent secondary damage to the body due to drawing;
- Focus the drawing force on the damaged location, and improve the efficiency of the drawing operation;
- Prevent moment resulted from drawing;



Correction/Drawing Method

Drawing Sequence

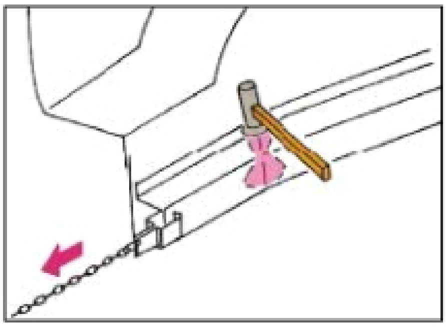
Note the method and procedure for drawing: during drawing, draw for a little while, then release the chain, unload and make measurements. Operate from inside to outside.

1. Take length as the priority. Draw the vehicle in the longitudinal direction along the centreline of the vehicle.
2. Then correct the width. Correct the vehicle in the horizontal direction.
3. Finally correct the height.

Stress Elimination

Eliminate the stress during drawing;

- Knock the raised location beside the deformed region and the back;
- Knock the welding location of the deformed region;
- Knock the ridge of the deformed region;
- Knock the reinforcement of the deformed region;



The high-strength integral body is susceptible to heat, so do not attempt to complete the correction/drawing just by operation of one step. Generally, follow the cyclic process: draw - keep balance - draw - keep balance. If some bodies are tightly folded after an impact, and there is a risk of metal damage, then heat it. When heating, only heat the corner or the location where the two panels are tightly connected. Heating is merely a means to eliminate metal stress, not a method to be used to soften some location.

Note: Do not service the body by heating oxygen-acetylene.

Apply tensile force to the predetermined location, recover the size and shape of the damaged steel sheet carefully and slowly, completely eliminate the stress of the curved steel sheet to achieve accurate repair of the body.

Note: overstretch shall be avoided during body correction. The only solution to overstretch is to replace the damaged sheet metals.

Panel Repair

Panel Repair Method

Puller Method for Sheet Metal Repair (Meson Machine)

The puller traction method for sheet metal repair is introduced in recent years, for this method, a number of flat gasket pullers is welded according to the size of the damaged sheet metals, the flat gasket puller is a traction medium, insert the wire into the medium, and draw the wire with a manual or mechanical manner, apply force to the damaged sheet metals through the medium so that it can be drawn outwards and resume its position and shape, especially for larger deformation, bilayer structure, inaccessible location, corner transition and door pillar, etc, the puller traction method provides a more convenient method for repair.

Heat Shrinkage Method

Local heat shrinkage is a commonly used method for sheet metal repair. Deformation of the sheet metals refers to tensile deformation of the related position, use heat shrinkage method to eliminate tensile stress and resume the shape.

Hammer and Jacking Block Method

The hammer and jacking block method is a conventional method for sheet metal repair. The metaler holds the hammer with one hand and the jacking block with the other hand or uses other tools to strike the sheet metal for repair. The manual work of the sheet metal requires the metaler to have the appropriate skill and experience, good repair skill cannot be obtained overnight, repair of the sheet metal includes repair of the deformed surface and correction of the shape line.

Technical Requirement for Panel Repair

No matter which method is used to repair the body surface, the specified technical requirement shall be met, and the performance and appearance quality of the vehicle shall be resumed.

Shape Recovery

For repair, the shape of the large smooth structure and the wedge structure of the local transition shall be recovered. When it is hard to recover the shape, change the original shape in an appropriate way, the shape shall be symmetrical, beautiful, firm and durable.

Integrity and Fineness of Continuous Surface

Most of the car bodies are produced by mould stamping, which have the integrity and fineness of the surface. For repair, the streamline surface shall have a continuous transition; the transition point of the surface shall have a smooth transition; the external surface repaired shall be as bright as a new surface, ripple, wrinkle, dent, knock mark, scratch and visible defect or obvious defect that can be sensed by a touch are not allowed. Especially for large scale repair, ensure the integrity, streamline feature, continuity and fineness of the continuous surface.

Sufficient Strength and Rigidity

The body of the original design has sufficient strength and rigidity, the body repaired shall ensure sufficient strength and rigidity. The vibration noise of the body repaired shall be within the permissible range, abnormal vibration noise shall not occur. Ensure the body has no any fatigue damage within the certain distance, the entire body shall have the specified rigidity, make sure the body panels is able to maintain its shape in use.

Sheet Metal Replacement

The process for sheet metal replacement is as follows:

1. Preparation before cutting new/old sheet metals.
2. Remove damaged sheet metals.
3. Position, adjustment and cutting of new parts.
4. Treatment and corrosion prevention before welding.
5. Final position and welding of the panel.
6. Treatment after Welding
7. Accessory installation and inspection after operation

Principle for Sheet Metal Replacement

Thin Panel Replacement

Thin panel replacement is made for aesthetic purpose and shall follow the requirements below:

1. Cutting is performed on the shortest position 15mm from the foam, damage to the foam by welding shall be avoided;
   ☞**Position of the foam**
2. When replacing the A pillar and rear fender, please remove the windshield;
3. Do not cut locations including any reinforcement.

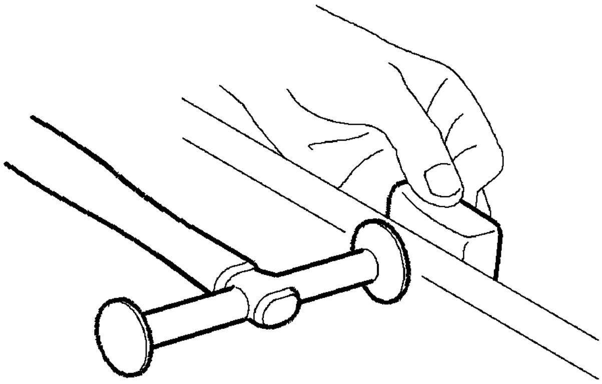
Thick Panel Replacement

Thick panel replacement is made for strength purpose and shall follow the requirements below:

1. Do not cut the energy absorption area;
2. No cutting is allowed within 50mm from the front/rear of the position for laser welding;
3. Cutting is performed on the shortest position 15mm from the foam, damage to the foam by welding shall be avoided;
   ☞**Position of the foam**
4. Do not cut locations including any reinforcement;
5. To ensure welding penetration, the size of the cutting seam shall be equal to the thickness of a panel.

Preparation before cutting new/old sheet metals

1. Remove all sealer residues with hot air gun to reduce the toxic fumes generated due to heat during welding.
2. Straighten the existing panel side seams with form block and hammer.



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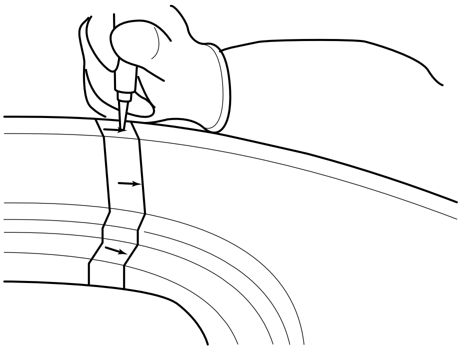
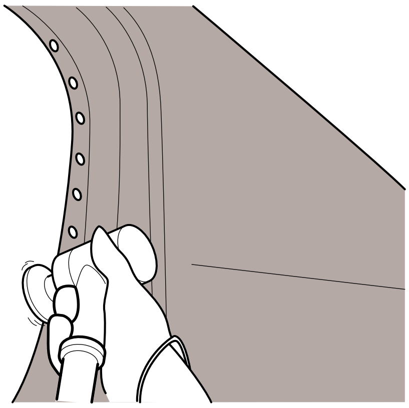
3. Indicate the actual cutting position on the old body parts (reserve 15mm paper adhesive tape), and indicate the location for welding spot elimination.
   ☞**Welding Information Provided by Manufacturer**



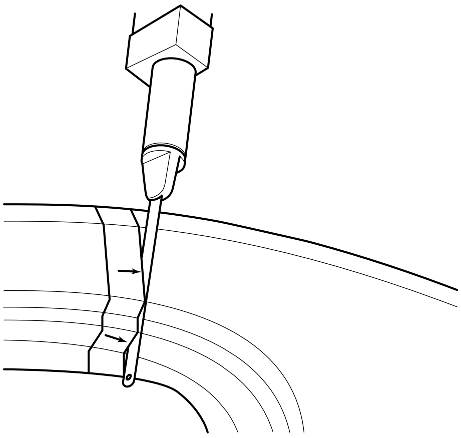
4. Indicate the actual cutting position on the new body parts, and paste the paper adhesive tape.

Damaged Sheet Metals Remove

1. Position the welding spot.
2. Grind the welding spot.



3. Carry out rough cut and remove the welding spot.

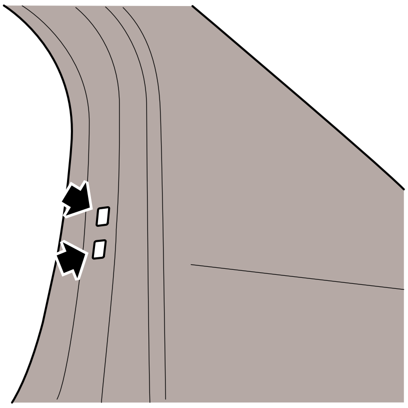


4. Remove the damaged sheet metals.

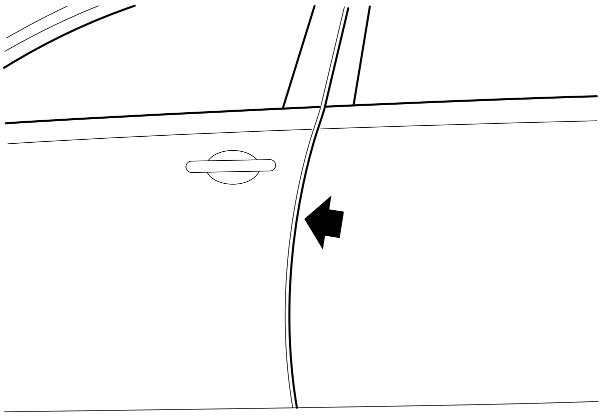
Position, adjustment and cutting of new parts

1. Position the new panel on the body and adjust its position and size.

- Compare the hole;



- Adjust the clearance;



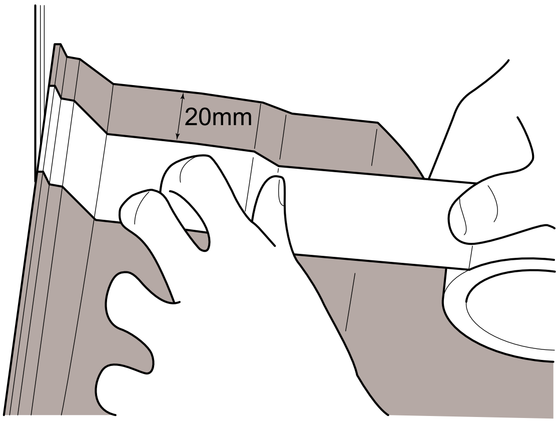
- Adjust the difference between the high surface and the low surface;

2. Cut the new/old panel by overlap, take care not to cut the reinforcement inside the body, remove the new panel, and cut the excess old panel section by section.

3. Mark the punch position for welding the plug hole.

Treatment and corrosion prevention before welding

1. New body parts: grind the location for welding and sealant application to remove the paint film.
2. Grind the location for welding and sealant application to remove the old paint film, burr and rust (20mm from the welding joint), but do not grind the cross section of the joint.

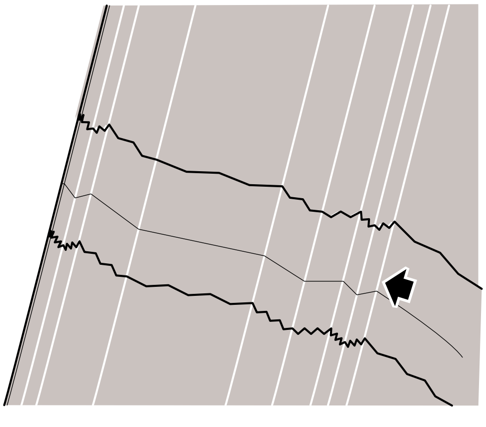


3. Clean the location for welding and sealant application on the new parts and body, and wait for 5-10min to volatilise the detergent.
4. Paint zinc spray to the welding junction of the new parts and body that does not need sealant, and control the thickness of the zinc spray.
5. Apply structure sealant: before application, remove and discard the sealant (10cm), to ensure uniform bond of the panel, welding shall be finished within the time specified by the structure sealant, or bond of the panel will be affected.

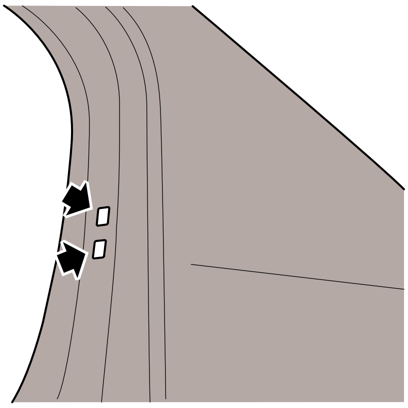
Final position and welding of the panel.

Adjusting Panel Refit

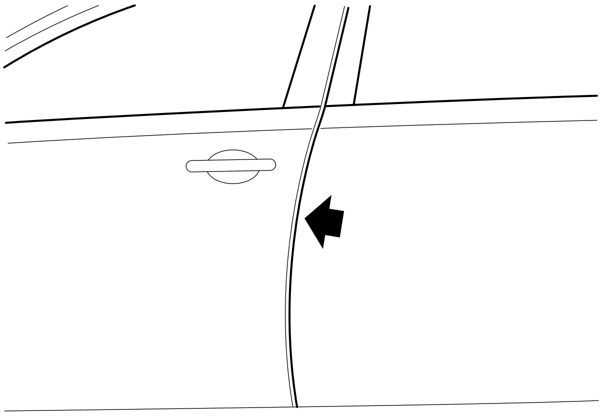
1. Confirm the position of the ridge;



2. Compare the hole;



3. Adjust surrounding clearance;



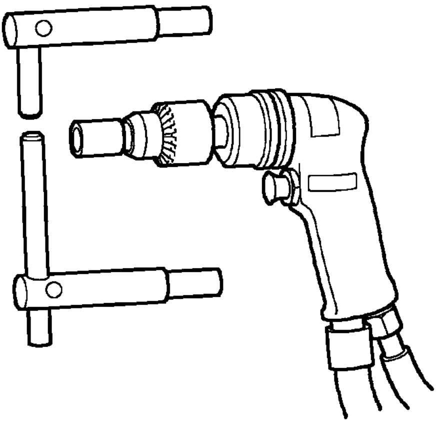
4. Adjust the difference between the high surface and the low surface.

Position of gas shielded welding

1. Select a gas ratio of 80% argon, 20% CO_2.
2. To ensure the accuracy of the position, positioned welding shall be performed on both sides of the ridge instead of on the ridge, and the distance of the positioned welding shall be above 30mm.

Trial Welding before Spot Welding

1. Select an electric welding arm for resistance spot welding and shape the electrode head with nozzle finisher. Finish the nozzle, making its diameter equal to 2 times the welding thickness and plus another 3.0mm.



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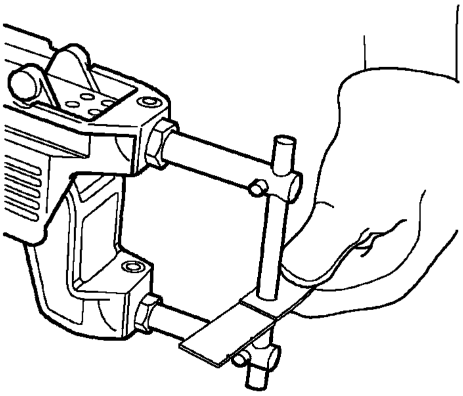
Caution: Use arms not exceeding 300 mm in length.

2. Fit the resistance spot welding arm and test equipments with test silicon slice so as to meet the operation requirements. If there is no monitoring device, the weld strength can be tested by checking welding pool pull wires around the metal under tensile force during the stretch.



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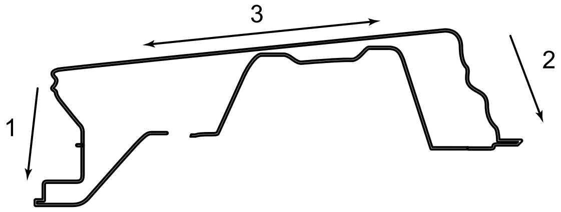
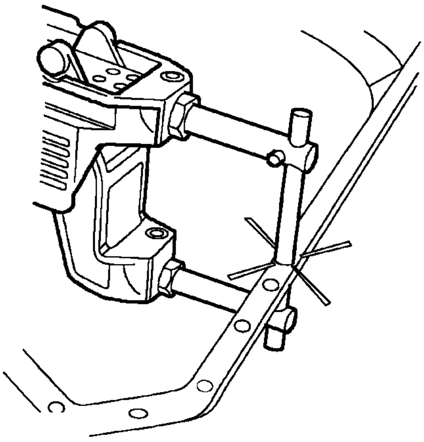
Welding Sequence

- Welding sequence: to decrease the possibility of strength reduction due to welding shunt, it is recommended that you begin with the direct welding, and follow the sequence shown below, the distance between the welding spots shall be 25mm.



Welding Requirement

- If the resistance spot welding has been used in production, a new resistance spot welding must be done at any other feasible position. During spot welding, to ensure the quality of the welding, test coupons of the same metal gauge and material are recommended for peeling test. If condition permits, the welding quality monitor can be used to ensure welding quality. If the satisfactory spot welding can not be achieved, plug weld welding must be used.



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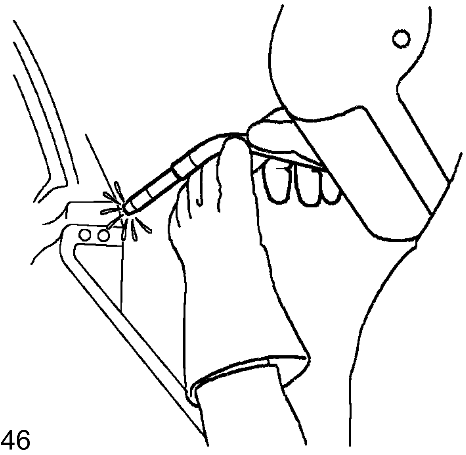
- Length of the welding rod holder of hand spot welding gun must be no more than 300mm.
- Single sided spot welding is not allowed;
- Neither braze welding nor gas welding is allowed unless it is specified in production.
- Gas shielded welding - plug welding: when welding the region with 3 layers or more than 3 layers of panel or the welding nozzle is close to the restricted area, and resistance spot welding is impossible, use the hole made by the cutter for spot welding, or punch or drill a hole to perform the MAG plug welding. The diameter of the hole for plug welding of the structural component is 8mm, and that for plug welding of the covering component is 5mm, the ratio of the welding spot for plug welding to the manufacturer's welding spot is 1:1.



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- Gas shielded welding - butt welding.

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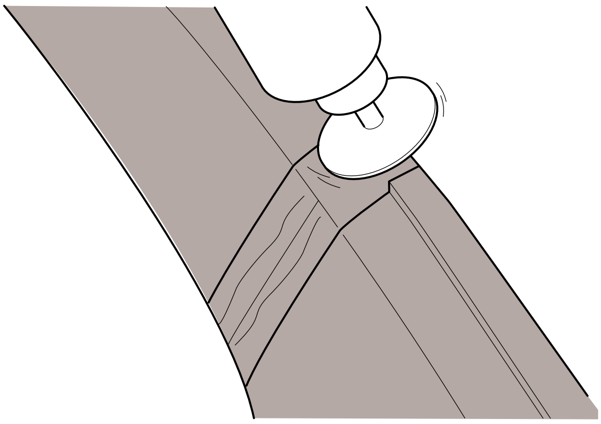
Treatment after Welding

Process for Corrosion Prevention

1. Use P36 disc polisher or belt polisher to grind or finish all welding locations, and clean the location.



2. Paint anti-corrosion primer which can prevent corrosion and improve the adhesion of the sealant.
3. Apply sealant, fill the seam between the panels to realise the leak prevention purpose.
   Position of the foam
4. Deliver the vehicle to the painter for painting.
5. Apply wax to the cavity before fitting the accessory.
   Information of Cavity Wax Application

Paint and Coatings

Overview

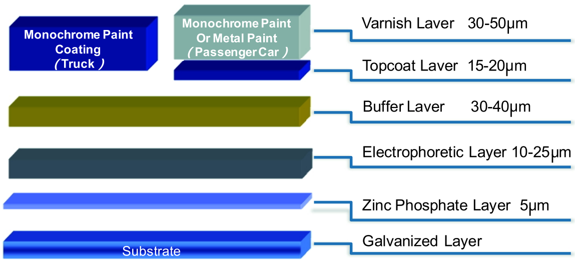
The purpose of automotive painting is to provide an excellent appearance, decoration, gloss protection, colour protection, corrosion resistance and a longer service life, so it has distinctive features:

- Automotive painting is a high-level protective painting, the coating shall have a superb corrosion resistance, weather resistance, acid/alkali resistance, inclusion resistance and an extensive adaptability, etc.
- Automotive painting (mainly refers to body painting) is a high-level decorative painting, and careful design, good working environment and conditions are required for providing the coating with good decoration. Vehicle decoration mainly relies on painting, the quality of the painting has a direct influence on the commercial value of the vehicle.
- Automotive painting is the most typical industrial painting, it requires reasonable and effective pretreatment method, drying method and process preparation.
- Automotive painting is a multi-coating painting system, and the painting quality and process control of each coating is of great importance.

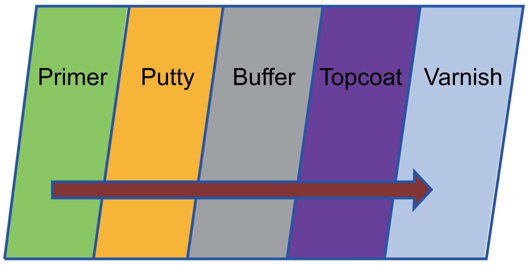
Coating Introduction

Coating Composition

During manufacture, paint application consists of the corrosion resistant coating (zinc coating) of the raw material, zinc phosphate coating, electrocoating, intermediate coating and top coat.



Aftermarket paint repair is composed of the primer coat, putty coat, intermediate coating, pigmented paint coating and varnish coating.



Function of Each Coating

1. Zinc Coating: with a good function of anti-corrosion/anti-rust, good paint adhesion, decorative performance and forming property.
2. Zinc Phosphate Coating: the first paint that is directly applied to the treated workpiece surface and is the base for the whole coating. Its characteristics are as follows:
   - It shall have a good adhesion to the treated surface of the workpiece, and the primer film formed shall have an excellent mechanical strength;
   - It shall serve as a corrosion inhibitor, and the primer coating shall have an excellent corrosion resistance, water resistance and chemical resistance;
   - It shall well fit the intermediate coating or top coat;
   - It shall have a good workability.
3. Electrocoating: enhance cavity corrosion resistance; improve the uniformity and leveling of the paint film thickness; raise the quality of the paint film, painting efficiency and paint utilization efficiency.
4. Putty Coat: used for the object surface with primer precoat so as to fill the pit, weld seam, scratch, rust hole, etc. on the object surface. until the surface becomes smooth.
5. Intermediate Coating: it is the last intermediate coat before applying the top coat, its binder content is between the primer and the top coat, and the paint film is bright and semi-bright. It provides the following functions:
   - Enhance the adhesion between the primer and the top coat;
   - Increase the total thickness of the coating and improve the film build;
   - Improve the corrosion resistance and weather resistance of the primer/top coat;
   - Repair minor defects on the substrate surface;
   - Raise the decoration performance of the top coat.

6. Top Coat: top coat is used for the final coating of the multi-coatings, it directly affects the decoration performance, weather resistance, gloss protection, colour protection, chemical resistance, contaminant resistance and appearance of the vehicle.

Classification of Top Coat

The classification of the top coat by colour effect is as follows:

- Pure pigmented paint: containing resin, pigment and additive only.
- Metallic paint: containing metal powder, with better gloss and saturation.
- Pear paint: comparing with the metallic paint, instead of using metallic paint, it uses mica powder coated with titanium dioxide and ferrum dioxide to improve the texture and gloss of the paint film.

By application procedure, it can be classified into the following processes:

- Single-process: a system that uses one type of paint to form a complete surface coating. Single-process pure pigmented paint and metallic paint are included.
- Double-process: a system that uses two different types of paints to form a complete surface coating, generally, the pigmented paint is applied before the finishing varnish is painted. Double-process pure pigmented paint, metallic paint and pearl paint are included.
- Three-process: usually, a layer of primer is required for this system, then a layer of pearl paint, and finally a layer of finishing varnish, the combination of these three coatings forms a complete surface coating. Three-process pearl paint and coloured varnish are included.

Principle of Paint Repair

The following principles must be followed when repairing the painted surface:

1. Use the certified jointing sealant to seal the inner and outer jointing.
2. Repair all damaged parts of the sealant under the vehicle body.
3. Use two-pack paint to repair the system and it shall be consistent with the original production parts.
4. Apply the inner wax to the entire inner surface without paint finishing.
5. Steam cleaner or high pressure cleaner must be used to clean the vehicle thoroughly before paint repair.
6. Clean the local part needing requirement with warm and water soluble cleaning solution, then thoroughly clean it with solvents. Painting must be done immediately after this operation.
7. In order to thoroughly clean the area of exposed metal due to damage of the painted surface, the cleaning area shall be larger than the original damaged area.
8. Use phosphate to eliminate the dust, contaminant, etc on the exposed metal, and offer a good repair environment for the new coating.

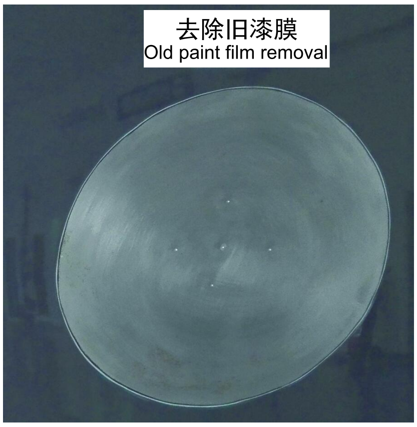
Coating Process

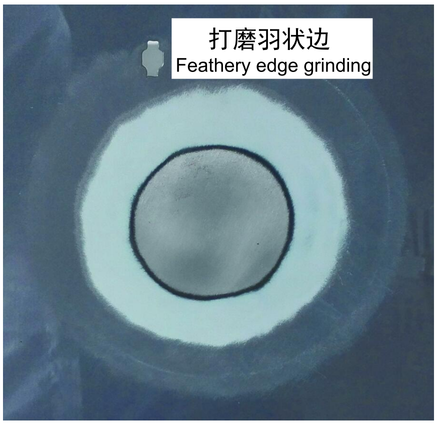
The automobile coating process is generally divided into two sections: One is the metal surface treatment before coating, also known as pretreatment technology; the other is the coating application process.

Surface Pretreatment

The surface pretreatment mainly consists of:

1. Surface cleaning: The mud, dirt and other foreign objects on the complete vehicle should be cleaned thoroughly during coating operation, particularly pay attention to the dirt at the door frame, trunk, front compartment cover apertures and wheelhouse, if not cleaned up, the new painted film may be splotchy.
   - Chemical soluble substance treatment: Apply the degreasing agent to the surface with a piece of special cleaning cloth, and then wipe off the degreasing agent and removed residues, such as grease, with another clean and dry cloth.
   - Treatment of water and floating dust: Use a piece of clean and dry dust-sticking cloth to absorb the water and floating dust, then blow it dry with a high pressure air gun.
2. Coating Identification and Damage Assessment:
   - Coating identification: It is important to identify the category of the coating on the body panels in repainting process. If it is not correctly identified, the serious problems may occur during finish application. If one vehicle has not been resprayed up to now, the category of the coating can be identified based on its model manual, but the category of body coating must be identified when repaired if the body has been resprayed.
   - Damage evaluation: Evaluating the damage properly is one of the critical factors to determine the repair cost and ensure the coating quality. The repair scope can only be determined after the proper damage evaluation, then the scope of each treatment process, transition area, the area to be covered and the parts to be removed, etc. can be defined, which will lay the foundation for the correct implementation of subsequent processes and satisfactory repair quality. The evaluation methods for film damage include visual, touch and ruler evaluations:
3. Old film removal: Examine the body coating carefully after washing the body to find the damage signs on the film, such as bubbles, cracks, peeling, rust and some damages resulted from paint baking, make-up, gas welding and other repairs. For the above damages, the old film must be wholly or partially removed based on the degree of old film damage and the quality requirement after repainting. The #P80 - P180 abrasive papers are recommended to make out the feather edges (not less than 3 mm).





Precautions for mechanical polishing:

a. Do not use the electric sander to make cross sanding on surfaces with large curve radian and high projection or very low dent;

b. Do not use the electric sander to sand the corners, wrinkle gaps, welding seams, sticking joints or the area that has been applied with plastic sealant.

c. The sander can only be activated to sand when contacting with the panel surface, do not apply pressure, or deep scratches will be made, and also the sander should be aligned with edge line to be sanded before it is activated;

d. To avoid the panel deformation caused by overheating, do not place the sander in the same position for a long time;

e. Do not make the well painted surface around the sanded area contact with the coarse sand abrasive, it is better to protect the perfect coating with tapes.

Sanding operation: The refined processing to the surface experienced rough sanding is aimed to obtain a more flat surface. Align the front of the rotating grinding wheel with the sanding surface, and get the rear part away from the surface a little. Keep this angle and move the sander up and down to sand, the covered area between each grinding crack is better to be 50% - 60%.

Panel replacement: Use #P280 - P320 abrasive paper to carry out dry sanding over the electrophoretic primer layer of the new part.

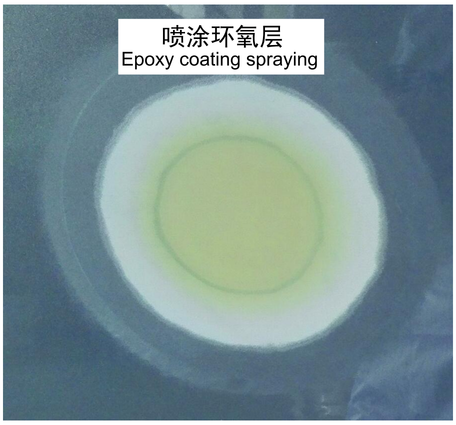
4. Grease and rust removal from metal surface:

- Remove the rust spots from the surface. The methods used to remove the rust from metal include: manual rust removal (polishing, sanding, high pressure water, etc.), mechanical, chemical and ultrasonic rust removals. Different rust removal methods are selected depending on the rust conditions.
- Clean the metal surface again.

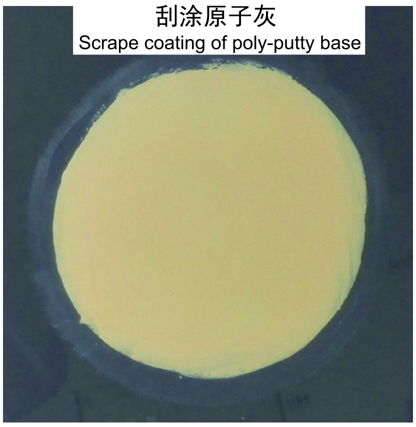
Each Coating Application

When you perform coating repairs over the panels which have been experienced surface pretreatment, please refer to the detailed process as below:

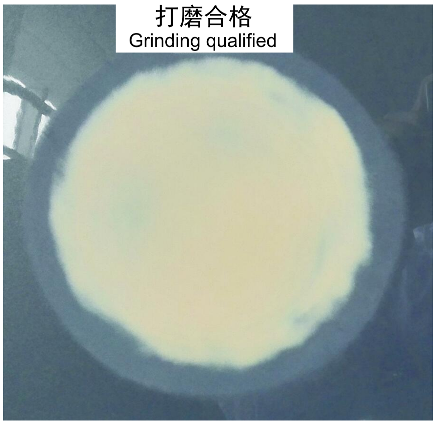
1. Primer Spraying
   - Cover the surrounding of the repaired area;
   - Wipe the surface to be sprayed with a piece of soft cloth soaked with detergent, while wipe the detergent left on the surface with another clean and soft cloth;
   - Blow the surface with compressed air;
   - Spray the anti-corrosive primer and let it dry;



2. Putty application (not required when replacing new parts)
   - Mix the putty and curing agent in the proportion defined in the instructions;
   - Use a clean putty mixing plate; only mix the amount of putty to be used by this time;
   - Fill up the sanding scratches and air pores, then apply the putty thoroughly;

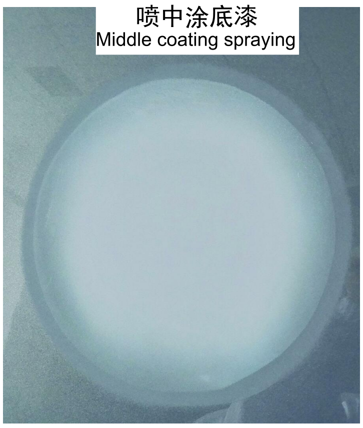


   - Let it dry for 5 minutes after application, and bake it with an infrared baked lamp according to the requirement in putty instructions;
   - Wear the respirator, select the proper type of abrasive paper, then sand the surface together with hard sanding pad. The rail sander can also be used, but be careful not to sand the surrounding areas. When the sanding pad is used, it should sand in the horizontal direction and move from up to down gradually.
   - Use the air blow gun to clean the repairing surface;



   - Wipe the surface with a piece of soft cloth soaked with detergent, while dry the surface with another clean cloth;

3. Surfacer Application
   - Cover the surrounding of the repairing area and prepare to spray the surfacer, the periphery of the covered area should be longer than the area to be sprayed by more than 10cm;
   - Wipe the surface to be sprayed with a piece of soft cloth soaked with detergent, while wipe the detergent left on the surface with another clean and soft cloth;
   - Blow the surface with compressed air;
   - Mix the surfacer, curing agent and diluent in the proportion defined in the instructions;
   - Firstly, spray a layer of surfacer lightly and let it dry for 5 minutes, then spray it wet twice;

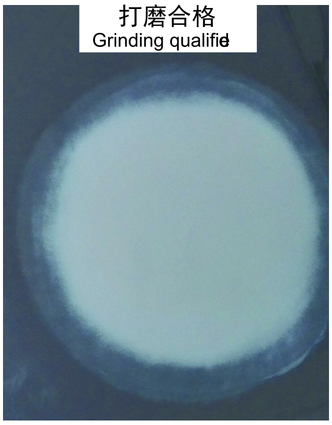


   - When the paint film flows level for 10 – 15 minutes, the film can be cured with an infrared baked lamp;

- Spray the sanding indication layer on the surface, so that it is easy to find the uneven locations when sanding.

打磨指示剂
Indicator agent grinding

- Sand the surface roughly with #P240 - P400 abrasive paper, then sand it finely with #P600 - P800 paper;



- Remove the masking paper along the periphery of repairing area, then blow the inside and outside surfaces of this area with compressed air to remove the abrasive dust and water thoroughly;

4. Finish Application

- Check the color code, and find out the color formulation according to the codes;
- Polish the body surface around the repairing area to obtain the exact color matching;
- Check the difference between the mix color and the original body color with the assistance of daylight stage lamp or in the sunlight;
- Spray the color test board under the same conditions with the vehicle to be sprayed (dilution rate, spray distance, air pressure, amount of sprayed paint, temperature, dry time, etc.);
- Let the test board dry for 15 minutes, then bake the board at the specified temperature within the set time. Note that do not overheat the test board when heating and curing;
- Wipe the area to be repaired with a piece of soft cloth soaked with detergent, while dry it with another clean cloth;
- Cover the surrounding of the repairing area, and start to paste the papers from the inside of the repairing area, be careful not to tear the masking papers;
- Blow the panel to be sprayed and the complete vehicle with compressed air, be careful not to tear the masking papers, finally wipe the surface with dust-sticking cloth;
- To prevent the dust, particles and other impurities from entering into the paint, pour the mixed paint into the gun tank with the help of screen;
- Try to spray to check the air pressure, the amount of sprayed paint, sector pattern and atomization;
- Wet spray two layers of colorant, the leveling between each layer takes 5 - 10 minutes;
- For the aluminum paint, make a virtual sprayed layer finally to ensure the aluminum powder is distributed evenly;

5. Varnish Application

- After spraying the colored paint layer, let it dry for about 15 minutes (the colorant layer totally loses the gloss), and spray the varnish: firstly, wet spray a layer of varnish and let it dry for 5 – 10 minutes; next, wet spray the second varnish layer, let it dry for 15 minutes and carry out heating and baking; (Note: Do not turn off the ventilation system installed in the spraying booth during the phase of drying after spraying)
- Heat and cure the film at the specified product temperature within the set time. Or, dry it forcibly for 15 minutes using a far infrared baked lamp;
- After heating and curing, the further treatment (e.g. sanding, polishing) can only be done when the film is cooled down completely.

6. Polishing and Waxing

- #P1500 or P2000 abrasive papers can be used to polish the defects on the coating, such as dust spots and sags, when the film is completely cooled down.
- Grind the sanded area using slack waxes together with wool wheels. At the start of grinding, the rotating speed of polishing machine should not be too high but increase slowly;
- Perform the polishing with fine wax and sponge wheel;
- Replace with a clean sponge wheel and remove the swirl marks left by polishing with polishing wax to allow the coating to restore its original gloss.
- Examine the accuracy of color mixture at the spraying area in the lamp light, and then move it to outdoor and check it under sunlight.

7. Cosmetic and Cleaning

8. Information for Various Brands of Paint

	Recommended Paint Manufacturer and Product Model		
	PPG	Sherwin-Williams	Akzo Nobel
Primer	P565-895 P565-9850 P565-9085	E2G973 GBP988-AR UPO7299 UPO7226-3	Sikkens #680 Primer Grey Protective green primer Sikkens universal plastic primer Alloy primer 1K 1CF/EF
Putty	P551-1050 P551-1052 P551-1057	18380221	Sikkens Kombi Filler Alloy putty
Middle coating primer	P565-510/511 P565-5601/5605/5607	P30 P50	Sikkens Autosurfacer® Classic Rapid
Clearcoat	P190-376 P190-6850 P190-6060 P190-6208+P210-6863 P190-588AP210-790/938/939 P190-588+P210-760/790	CC645HS HPC15 CC939 CC931 CC930 CC655	Sikkens Autoclear® Plus HS Sikkens Autoclear® Xcel Autoclear® II Clearcoat Autoclear® Rapid Autoclear® Mat Clearcoat
Finishing coat	NEXA Autocolor 2K (oil paint) Aquabase plus (water paint)	Ultra 7000 (oil paint) AWX (water paint)	Sikkens (oil paint) Sikkens Autowave (water paint)

General Film Coating Defects

Paint Film Defects Caused by Application and Treatments

Particles

The phenomenon that bumps in the film coatings are spread over the whole or local surface in granular form.

Analysis of Possible Causes:

- Poor air cleanliness and impurities in the painting environment, such as dust;
- Workers wear dirty clothes or the fibers contained in the materials are easy to fall out, substrates that are not properly handled have bumps, the vehicle body is not cleaned thoroughly, etc.
- The painting pressure is insufficient, atomization is poor, the spray gun is not cleaned up and an improper screen is selected;
- The pigments or flashing materials in the paints are badly dispersed, the paints are unfiltered or filtered improperly, the paints become deteriorated and show abnormal signs, such as separate out, flocculation.
- The film is moved out of the baking booth before drying the surface to dust-free.

Preventive Measures:

- Ensure that the spraying environment is clean;
- Ensure that the objects to be painted and workers are cleaned thoroughly before entering the baking booth;
- Ensure the paints' performance, the deteriorated and poorly dispersed paints are not applicable;
- Set the optimal parameters for paints' application and use the spray gun to spray after the paints being filtered.

Defect treatments: The tiny dirty spots can be polished after removed by abrasive paper; if the impurity particles are large or the dirty spots on the surfaces of primer and even surfacer can only be ground to the extent that the spots disappear completely, perform the spraying again.

Sags

Upon the liquid paint is sprayed onto the workpiece surfaces, some wet film surface runs down, creating unevenly stripes and sags, which are thin on the top and thick on the bottom, resulting in the local thicker film on vertical surface. It can be divided into sinking, sagging and running depending on the shapes of sags.

Analysis of Possible Causes:

- The painted workpieces' surface is too cold;
- Low application environment temperature, slow wind speed and high solvent vapor content in the ambient air;
- Low product temperature, low spraying pressure, slow gunning speed, short distance to spray gun, thicker film;
- Large caliber of spray gun, poor atomization of spray gun;
- Slow solvent evaporation rate and low paints' viscosity;
- Short distance between spray gun and workpiece, slower gunning speed, thicker spraying coatings;
- Insufficient flash-off intervals between layers;

Preventive Measures:

- Improve the painting environment, control the appropriate ambient temperature, humidity and wind speed.
- Choose the correct solvent and pay attention to select the dissolving capacity and evaporation rate of the solvent;
- Strictly control the viscosity and the temperature for coating application;
- Reduce the amount of paints from spray gun, and increase the gun distance and gunning speed;
- Full flash-off between layers;

Defect treatments: For the slightly local varnish sagging, it can be sanded to eliminate the sagging defects before being polished if this defect exists; or if the sagging defect is more severe or it appears on the surfacer layer and the color paint layer (finally revealed on the layer of varnish), the sagging must be sanded thoroughly and make the spraying again.

Pin Holes/Eyes

The blisters or solvent bubbles appear on the film and there are small needle holes on the top of them, which are referred to as pin holes (the solvent contained in the film coatings evaporates rapidly during the surface drying, its left trace forms hole); these pin holes are known as defects that the holes are still visible on the surface after spraying the finish due to some holes on the substrate are not filled up. They are easily generated at the corners of workpieces.

Analysis of Possible Causes:

- Pin hole: The paints are mixed with impurities, for example water enters into the solvent based coating; the painted objects have dirt on their surfaces; the flash-off intervals between layers is insufficient during application; the continuous spraying is too thick; the temperature rises up suddenly and the surface is dried rapidly when stoving.
- Pin eyes: The uneven locations on the original workpiece surface are not filled up;

Precautions and Improvements:

- Set appropriate temperature and humidity for application. Wind speed and other conditions;

- Mix the paint and solvent in proportion to ensure the proper fluidness;
- It should be heated up slowly to avoid the rapid solvent evaporation.
- Full flash-off intervals between layers;

Defect treatments: The defects should be completely ground to remove the pin holes and pin eyes, then repaint it.

Blistering

Part of the film coating floats off the painted surface or prime coat and is filled with liquid or gas, which is about 1-5mm in diameter or floats off in large pieces. If there is some water under the film, the vapor generated by evaporation of water will plump up the film to form blister when the temperature rises up.

Analysis of Possible Causes:

- The ambient humidity is high and the film is dried naturally after spraying, resulting in moisture infiltrating into the film;
- The substrate is not dried properly, the drying time is short between coatings, the heating and drying are too fast;
- Grind the putty while adding water and the putty absorbs water;
- There is oil or water in the compressed air lines;

Preventive Measures:

- Grind the dry putty;
- Ensure that the previous coating has met the requirements for cleanness and dryness before spraying;
- Reduce the humidity in the painting and spraying room;
- Use the curing agent and diluent suitable for environment temperature, make it dry as soon as possible once the spraying is completed to prevent the moisture from infiltrating into the film.

Defect treatments: Once blisters appear on the film surface, this surface should be ground to remove the blistering defects completely, then respray it depending on the surface conditions.

Orange Skin

The orange skin is used to describe the leveling property of the film: When you observe the film surface against the light, you can see different ripples of 1 - 5mm presenting on the film surface, and the brightness and plumpness vary in different ripple areas, such texture on the film surface, which is similar to orange peel, is known as orange skin.

Analysis of Possible Causes:

- The substrate is not flat or the finish coating is sprayed to the surfacer surfaces without having the orange skin ground smooth;
- The ambient temperature is high, the wind speed is fast and the substrate temperature is high;
- The diluent volatilizes rapidly, the paint has high viscosity and the film is too thin;
- The distance from spray gun is too far, the gunning speed is too fast, the spraying pressure is low and the amount of paint out of spray gun is little;

Preventive Measures:

- Grind the intermediate coating completely smooth according to the process requirements;
- Control the ambient temperature and wind speed (0.2 - 0.6m/s);
- Use the diluent suitable for that temperature, and adjust the paint viscosity as per the paint manufacturers' product instructions.
- Adjust the gun pressure, then regulate the gun to proper distance and reduce the gunning speed as per the manufacturers' instructions;
- Spray the appropriate layers to ensure that the film get the desired thickness;
-

Defect treatments: Only perform the grinding and polishing if the defect of orange skin is slight; the orange skin should be ground to completely removed and then be resprayed if the defect is serious.

Sanding Scratches

The sanding scratches left by sanding substrate are visible on the film after spraying the paint. Sometimes, the sanding scratches on the substrate will extend due to the erosion caused by solvent contained in the film, the upper film would be subsided gradually after a period, resulting in the sanding scratches more and more obvious.

Analysis of Possible Causes:

- If the improper abrasive papers are used to sand the substrate, the sanding scratches will be wide and unable to be covered and filled up by upper film;
- If the lower film is sanded and sprayed with upper film over it before it isn't totally dry, it is easy to make the sanding scratches to extend due to the erosion caused by solvent in the upper film and form the sanding scratches defect;
- The diluent that has high solubility for upper paint or too slow to dry has been misused.

Preventive Measures:

- When you select the abrasive paper number to make sanding, you should observe the principle that the abrasive paper number should not be jumped by 2 levels each replacement;
- Ensure that the lower film is totally dry before sanding;
- Select the correct upper film solvent as per the product instructions;

Defect treatments: For slight sanding scratches, they can be removed or made less obvious by sanding and polishing as they have been filled up by paint; For the sanding scratches that are more obvious, they cannot be removed by sanding and polishing, it should be resprayed after removing the scratches.

Putty Marks

A putty mark means the defect that trace is left along the edges of putty application areas after spraying the surfacer or finish.

Analysis of Possible Causes:

- The feather edges are improperly treated before putty application;
- The putty is mixed with curing agent in improper proportion;
- The next action is taken before the putty is completely dry (sanding, spraying the surfacer, etc.);
- The putty is not flat enough, the feather edges do not meet the standard, and it is higher or lower than the old surrounding coatings or metal;
- The curing agent and diluent mixed in the surfacer or finish are dried slowly, or the flash-off intervals between layers are too short when spraying the surfacer or finish, and the solvent penetrates and erodes the putty, resulting in the edges expanded and extended.

Preventive Measures:

- The width of the feather edges must be 20 - 30mm and the surface is smooth without steps before putty application;
- Adding the curing agent in proper proportion according to the product instructions;
- Make sure to perform the sanding and spray the surfacer when the putty is totally dry.
- Use the correct curing agent and diluent, and ensure the flash-off interval between layers is enough.
- The periphery of putty must be sanded to be qualified. Not only the putty, but also the extended old surrounding coatings should be sanded when you sand the putty edges to allow the putty together with the surroundings to form flat surface.

Defect treatments: Once the putty marks appear, those areas should be sanded, and apply the putty again and respray the surfacer and finish.

Lifting

The lower-layer paint is single-component, or even if it is two-component, it is not dry and cured completely (including improper amount of curing agent is used), when the paint is sprayed above it, the solvent contained in upper film will erode the lower film, causing the uplift and shrinks present on the lower film surface.

Analysis of Possible Causes:

- The lower film is not totally dry;
- The lower film becomes deteriorated;
- The continuous spraying of surfacer or finish results in too thick surface, or the used curing agent and diluent are too slow to dry, or the diluent with high solubility is used, or the flash-off intervals between layers are too short when spraying the surfacer or finish, or the low air temperature during the spray causes the infiltration and erosion of solvent contained in the surfacer or finish, resulting in the lifting occurred at the putty edges, one-component putty or surfacer edges.

Preventive Measures:

- For the film not totally dry, it must be sanded and sprayed with the next layer paint after it is completely dry. If it cannot be totally dry due to the improper adding of curing agent, it needs to respray the paint mixed with proper curing agent after film removal.
- For the deteriorated film, shown as chalking, cracking, loss of gloss, they must be removed totally and resprayed with two-component surfacer or finish;
- Use the correct mating curing agent and diluent, and ensure the flash-off interval between layers is enough.
- Use the two-component putty and surfacer.

Defect treatments: When the lifting defect appears, it should be sanded to remove any defects at the lifting area, if the lifting is severe, the film that has lifting should also be sanded and removed completely, then spray the two-component surfacer and finish.

Paint Film Defects Caused by Operating Environment and Treatments

Paint film defects caused by external corrosive materials

Defect phenomenon: The film defects occur when the film is affected by the acidic and alkaline materials as well as industrial fall-outs, such as asphalt, oil, battery electrolyte, bird droppings, sap, acid rain, pollen, dust produced by steel plant and black carbon from boiler stack. It generally appears as uplift, discolor and even cracking and peeling caused by the contaminants infiltrating into the film.

Defect treatments: If the film defect is tiny, it can be recovered only by polishing the surface damage; if the film has been discolored, the defective areas should be sanded until eliminating the defect, then respray it.

Water Spots

Defect phenomenon: When the rainwater on the film surface or the tap-water left by car washing is heated to evaporate, a white ring drop mark will be left on the water-drop area and cannot be removed by common cleaning methods.

Causes: As the water contains mineral substances, such as calcium, when the water is heated to evaporate, some warm water will infiltrate into the softened film with heat, and the left mineral substances infiltrate into the coating.

Defect preventions and treatments: Try not to wash the car under the sunlight, and wipe the water drops off the vehicle surface after washing to avoid evaporation caused by heating. It should only be polished when water spots appear.

Stone-crash Damages

Defect phenomenon: Some small stones may hit the film and cause the film peeling during vehicle traveling, the area where the film is peeled off usually form the surface with sharp and jagged edges, sometimes a small indentation will appear in the middle of this area. The front edges of the front compartment cover or the roof is usually damaged by stones.

Defect treatments: When the stone-crash damages occur, the film on the defective area must be removed and sanded to feather edges, and filled up with putty or surfacer, then continue to apply the surfacer and finish; if the area hit by stones is rusted, the rust must be removed thoroughly.

When new original parts are sprayed, if the finish is directly sprayed onto the electrophoretic coating without spraying surfacer, and when the plastic parts are sprayed, if the surfacer and finish are not added with softening agent depending on the plastic hardness, the stone crash protection for the film will be reduced and the film is easy to hit off by stones and sands.

Discolor/Chalking/Loss of gloss

Defect phenomenon: As the vehicle exposes to the ultraviolet rays, the pigment deterioration of the film causes color fading, the resin deterioration causes yellowing, the film peels off as powder and loses gloss.

Defect treatments: Color fading is a representation of film aging, it is usually shown up together with chalking and full loss of gloss. Once any one of these defects occurs, the defective film must be sanded and removed thoroughly, then respray the two-component surfacer and finish.

Seal

Overview

Process Area of Underbody Seal

Underbody areas and doorsill outer panels should be processed with plastisol PVC underbody sealer. This sealer shall not be reused. When repairing the sealer for the underbody areas, the underbody sealer upon delivery should be removed and returned to the proper breakpoint. Expose the clean metal surface, and the current sealing edge shall also fit firmly to the panels.

Use new chassis sealant between the primer and the intermediate primer. If necessary, use the seam sealant before applying the chassis sealant. Before coating the chassis sealant, fit the plugs and insulating ring on the disk type floor (except the part for wax spray). Refit the heat-fusible plugs damaged in repair with heat blower or replace them with rubber insulating ring.

Before using new chassis sealant, cover the suspension, wheel, tyre, power unit, exhaust system and brake system (including all mounting points).

Seam Sealant

For factory assembly, apply **PVC** sealant treated by baking to special joint weld and sheet metal edge. This kind of material is not suitable for repair, so approved special sealant shall be used for aftersales service.

Weld seam sealant

Seam sealant is used after the primer and before the intermediate primer and outer coat. The spray of the seam sealant must be smooth and continuous, and the spray line depends on the type of the seam. If the sealant is coated by brush, pay special attention to the coverage area required for the weld. At the places needing sealant formation, use cloths dipped in the solvent oil to complete the required operations.

Remember to seal all the seams to be processed after each repair. The area away from the joggled joints often distorts when the vehicle is damaged. Thus, sealant for these places will frequently occur in the following repair and correction. Check all the welds around the area to be repaired to see whether it is damaged, then process the damages as required, then coat new sealant. Specific steps are as follows:

Clean the affected seam, re-process the exposed metal area with proper etch primer;

Coat proper sealant at the required places;

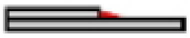
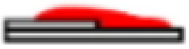
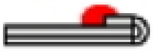
Process the affected area with acid-etch primer (chassis sealant is also acceptable), and apply proper colour paint film.

After reassembly or refit of parts, if the seam is plugged, then apply paste seam sealant to such seam. Blockage of the seam may occur after panel repair. In this case, apply sealant and paint before final assembly. If the inlet is of proper size, apply seam sealant to the two sides of the joint to be repaired. If the spray can be only done to one side (such as compartment), then use cavity wax to process the affected compartment beam.

Seams which require sealant when assembling in the plant is described in the figure below.

Caution: Look through all the joints near the fixed areas. If necessary, all the combined ,fixed or replaced areas should be sealed. These areas can't be ruined. Sealing could protect from waters and wind noises and so on. Before the final inspection, it is necessary to look through all the sealed areas.

Application of PVC sealant:

Process	Operation method	Implementation effect section view	Application location
PVC sealant	Sealant Elimination		Mating faces for fitting the parts, welds with appearance requirement; such as tail lamp, side body and roof joint, visible location after assembly
	Sealant Application		Welds without appearance requirement or assembly requirement (covered weld, with a width < 50mm); such as seam of interior floor, underbody
	Sealant Injection		Edge of four doors and two covers (thickness: 1-2.5mm, width: 5-9mm)

Plug

Plug type	One-component plug	Two-component plug
Workshop	Painting workshop or general assembly workshop	Painting workshop
Material	EPDM, TPE, PA6, TEEE, etc.	(PA6-GF) + hot melt adhesive, metal sheet + hot melt TPE + hot melt adhesive, etc
Sealing Performance	30mm water column, 10min, no water leak	500mm water column, 10min, no water leak
Application Location	4 doors, side body, etc	Floor, spare tyre compartment, etc
Remark	Seals holes with no direct connection with passenger compartment or waterproof holes	Used to seal holes directly connecting passenger compartment and external horizontal holes

Sealing Performance Test

Overview

Process of the leaking problem needs to combine techniques, experiences and instincts to take proper and effective measures. Do not come to conclusions fast only by naked eyes.

Test Tool and Instrument

When checking and correcting the leaking problems, the below tools and instruments are recommended to use:

1. Garden Sprayer (manual)
2. Wet/Dry Vacuum Cleaner
3. Dry, Absorbent Cloth
4. Battery Torch
5. Mirror
6. Weatherstrip Locating Tool
7. Trim Panel Remover
8. Small Wooden or Plastic Wedges
9. Dry Compressed Air Supply
10. Hot Blower
11. Sealer Applicators
12. Ultrasonic Leak Detector

When checking for leak, at least the following parts should be checked:

- Front Inner Space;
- Rear Seat Space;
- Storage Compartment or Luggage Compartment

Test Method and Measure

The operators at the fittings center can judge from where to check the leakage by information offered by the customers. The next step is to find the leaking spot after the leaking place is founded.

For the first case, an easy and effective method is the common garden sprayer. Nozzle of this extruding garden sprayer ought to be adjusted, so that water can be sucked into the nozzle directly and spray out proper spray. At the dark corners, a mirror or battery torch cab be used (the test light using supply voltage is not available).

The test order is very important. Begin from the lowest point and go up gradually, this can avoid blocking off the other leaking place when an area is being checked. If the test is begun from the windscreen, any water flowing into the pumping chamber may drop on the pedal by baffle insulating ring. Even though, it may be judged wrongly that seal of the windscreen fails.

Another part for leaking check is to visually observe whether the door hole sealer, insulating ring or weather strip is damaged, aged or displaced. Meanwhile, align the door with the seal.

Note: Check the colour of the water around the leak. If the water is dirty, the leak is from under the vehicle. If the water is clean, it is from above.

When a leaking spot is found, the methods below are necessary for resolution of the leak problem:

1. Replace all of the damaged, displaced and aged door hole seal and weatherstrip.
2. Check all the body seals and ensure it is fixed on the fixing flange/fixing face correctly. If necessary, the simitar can be used.
3. Blow the body weld seam to be processed with compressed air and/or hot blower when necessary.
4. If necessary, apply sealant to the outside of the connector to prevent water.
5. When correcting leakage of the windshield and weatherstrip (or polish between the upper glass and the body directly), try not to remove the glass. Use qualified materials at proper places (such as glass to the weatherstrip or glass to the body).

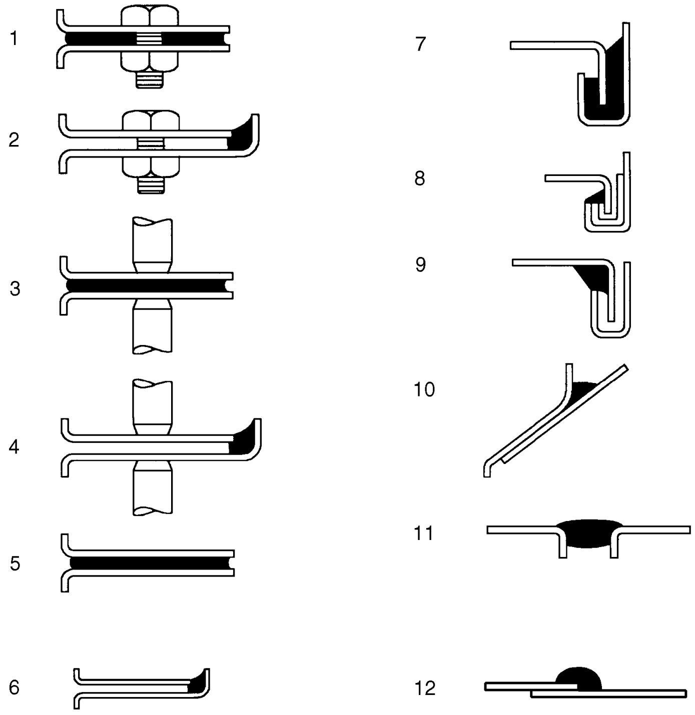
Initial Door Seal Replacement

The initial seals for both front and rear doors are stuck on the specified positions. Always comply with the regulations below when replacing the weatherstrip:

- Clean the position where the door weatherstrip is located. Do not clean the doors with paint diluent agent.
- The ideal temperature for sticking the weatherstrip is 25°C (77°F). For either the door or the weatherstrip, when the temperature is less than 18°C (64°F), it is hard to stick the weatherstrip.
- Do not apply too much force to stick the weatherstrip, this will make disassembly or re-installation much easier. If the weatherstrip shall be refitted, do not touch the contact face or stain it.

Information of Sealant Positions

Body Seal Identification



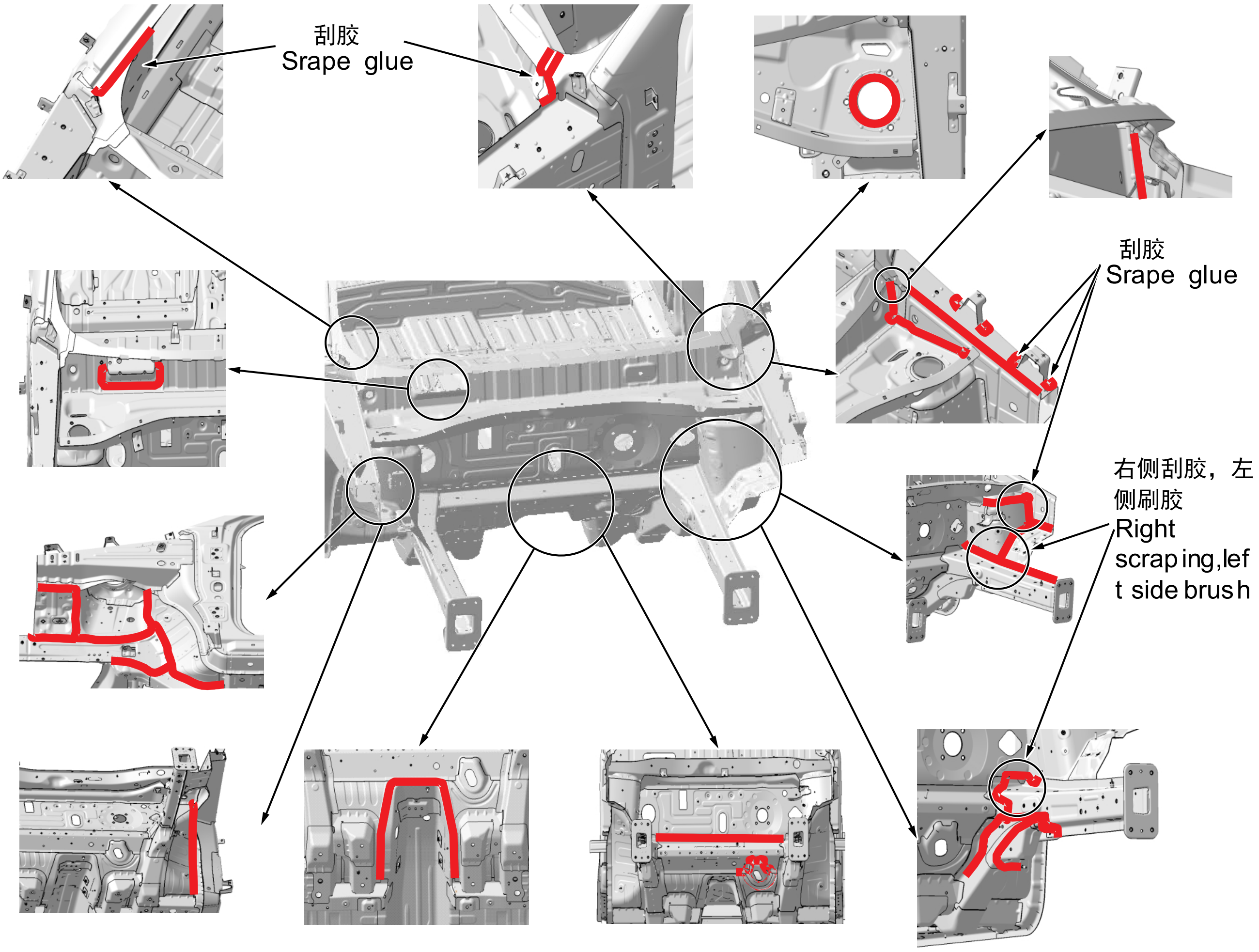
1. Between Panels - Bolted Connection
2. Panel Edges - Bolted Connection
3. Between Panels - Spot Welding
4. Panel Edges - Spot Welding
5. Between Panels - Bonding
6. Panel Edges - Bonding
7. Riveting Joints - Type (a)
8. Riveting Joints - Type (b)
9. Riveting Joints - Type (c)
10. Panel Gaps - Type (a)
11. Panel Gaps - Type (b)
12. Lap Joints

Sealant Information

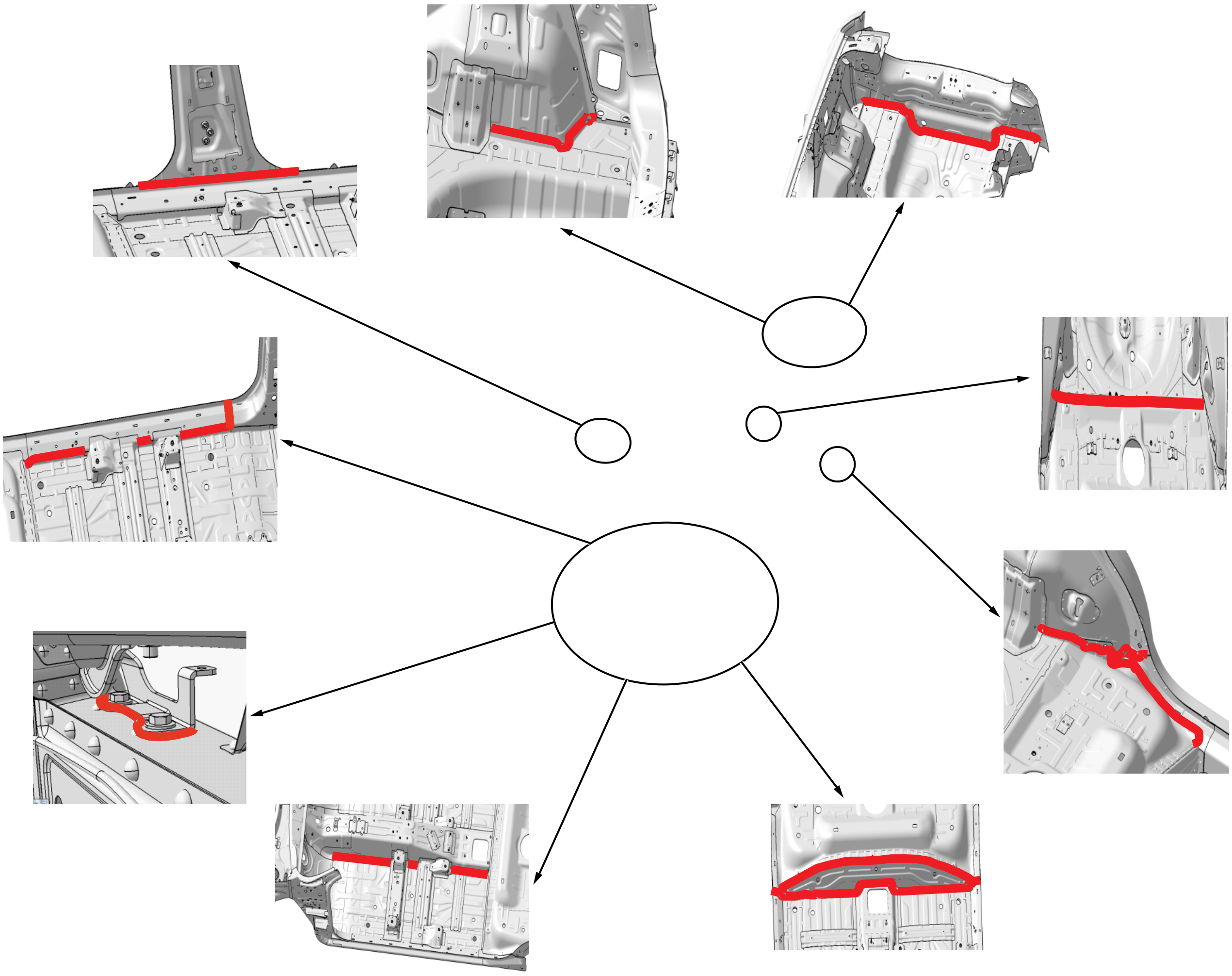
After the panel is welded or replaced for repair, it is required to use PVC sealant to seal the weld seam and the new panel according to the following construction principles and the instructions on gluing position given by the original manufacturer to guarantee the repair quality:

- PVC brushing glue requirements: cover the weld seam to make the surface smooth and even without fillets, and the width < 50mm.
- PVC tube glue requirements: cover the weld seam to make the surface smooth and even, the width is within 5-9mm and the thickness within 1-2.5mm.
- PVC frictioning glue requirements: cover the weld seam to make the surface smooth and even without pinholes or bubbles.
- Plug thumb glue to the following red dot position. For any place not specifically described in the figure below, brushing glue is applied.

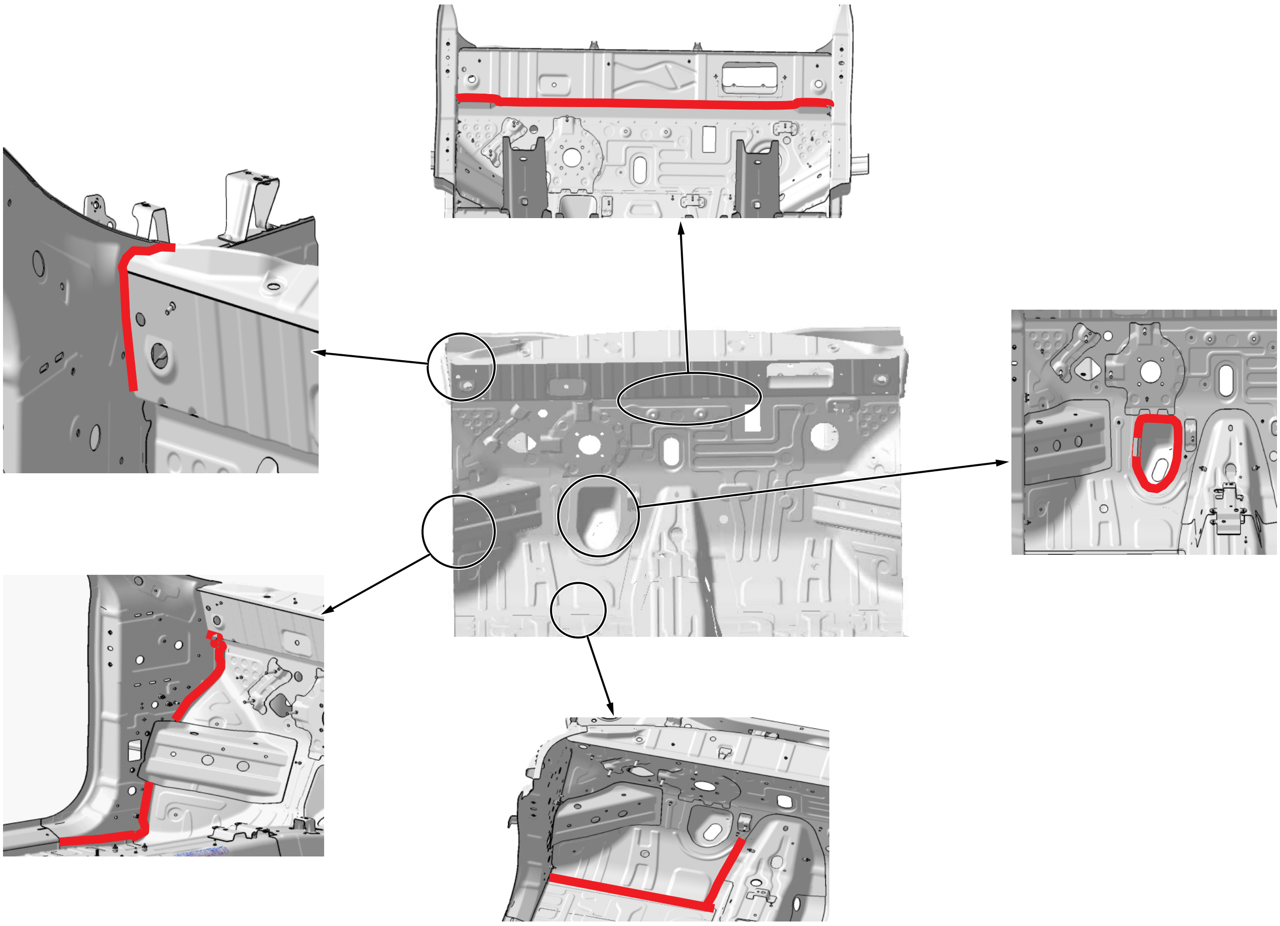
Front Compartment


刮胶
Srape glue
刮胶
Srape glue
右侧刮胶，左侧刷胶
Right scraping,left side brush

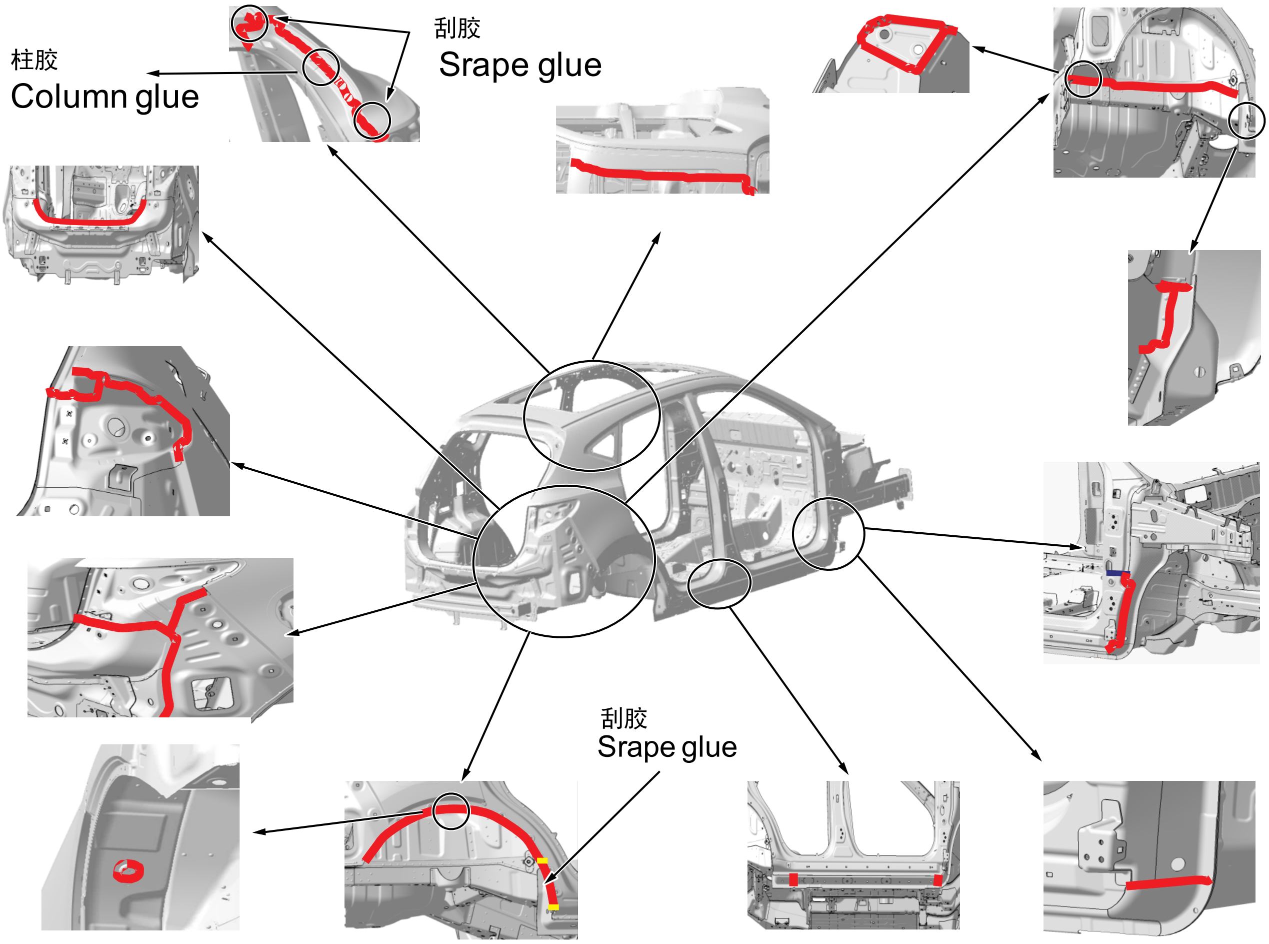
Floor Panel

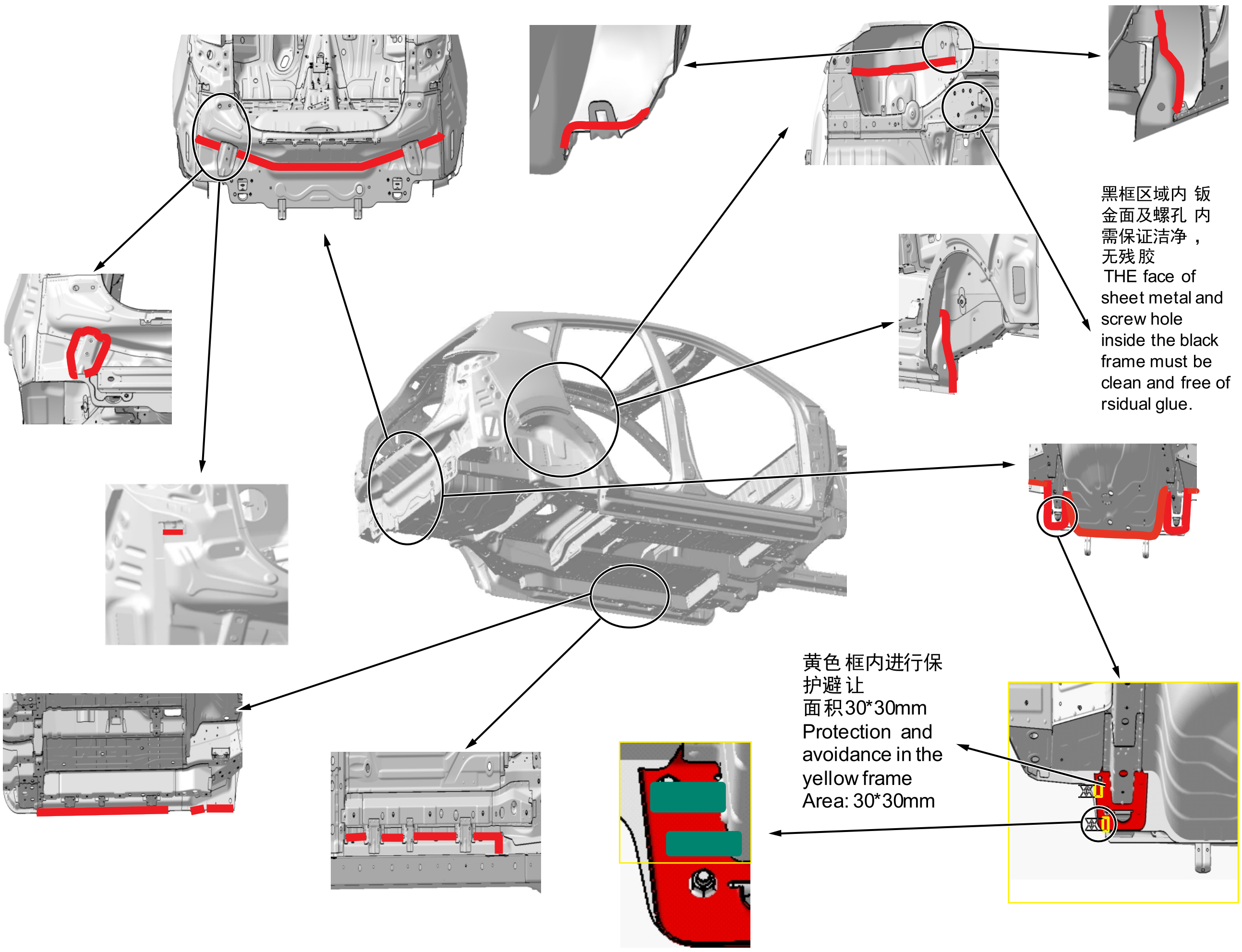


Dash Panel



Bodyside Panel


柱胶
Column glue
刮胶
Srape glue
刮胶
Srape glue



黑框区域内钣金面及螺孔内需保证洁净，无残胶

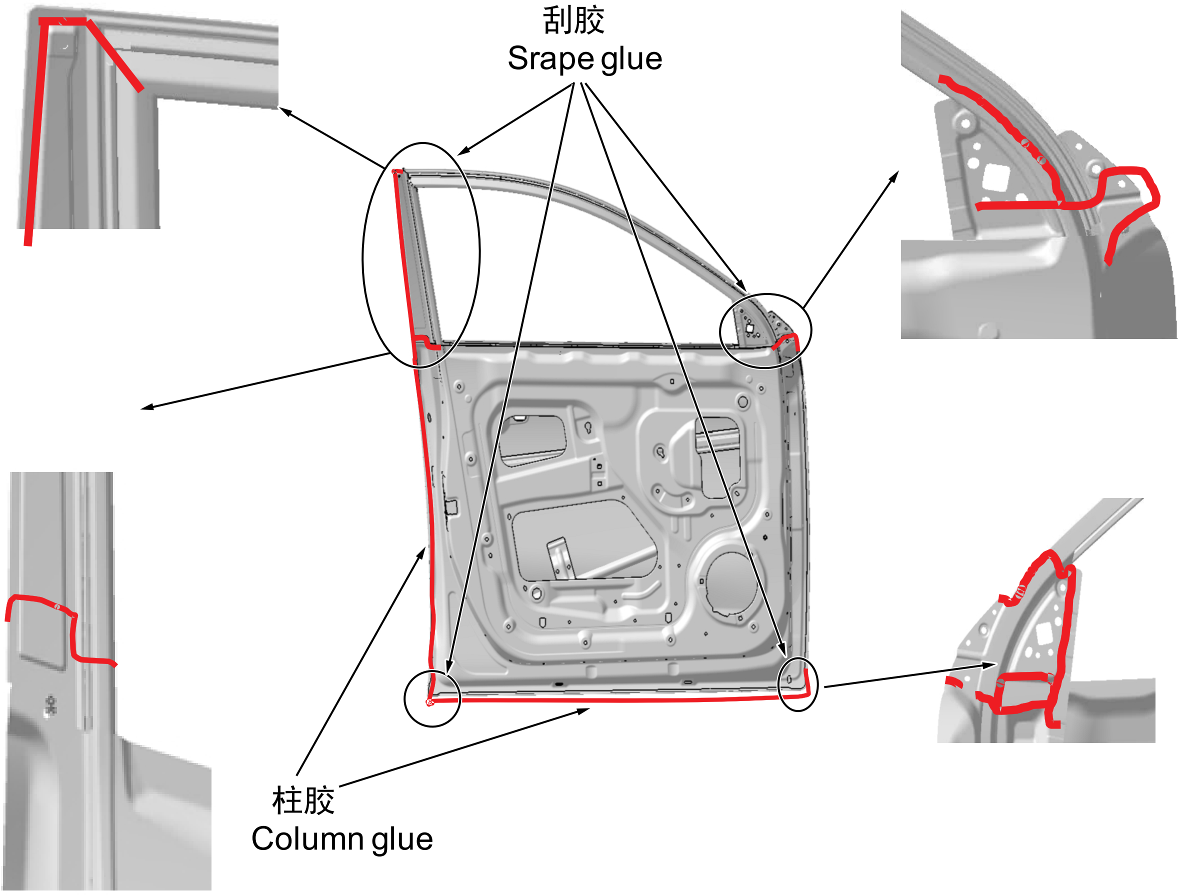
THE face of sheet metal and screw hole inside the black frame must be clean and free of rsidual glue.

黄色框内进行保护避让

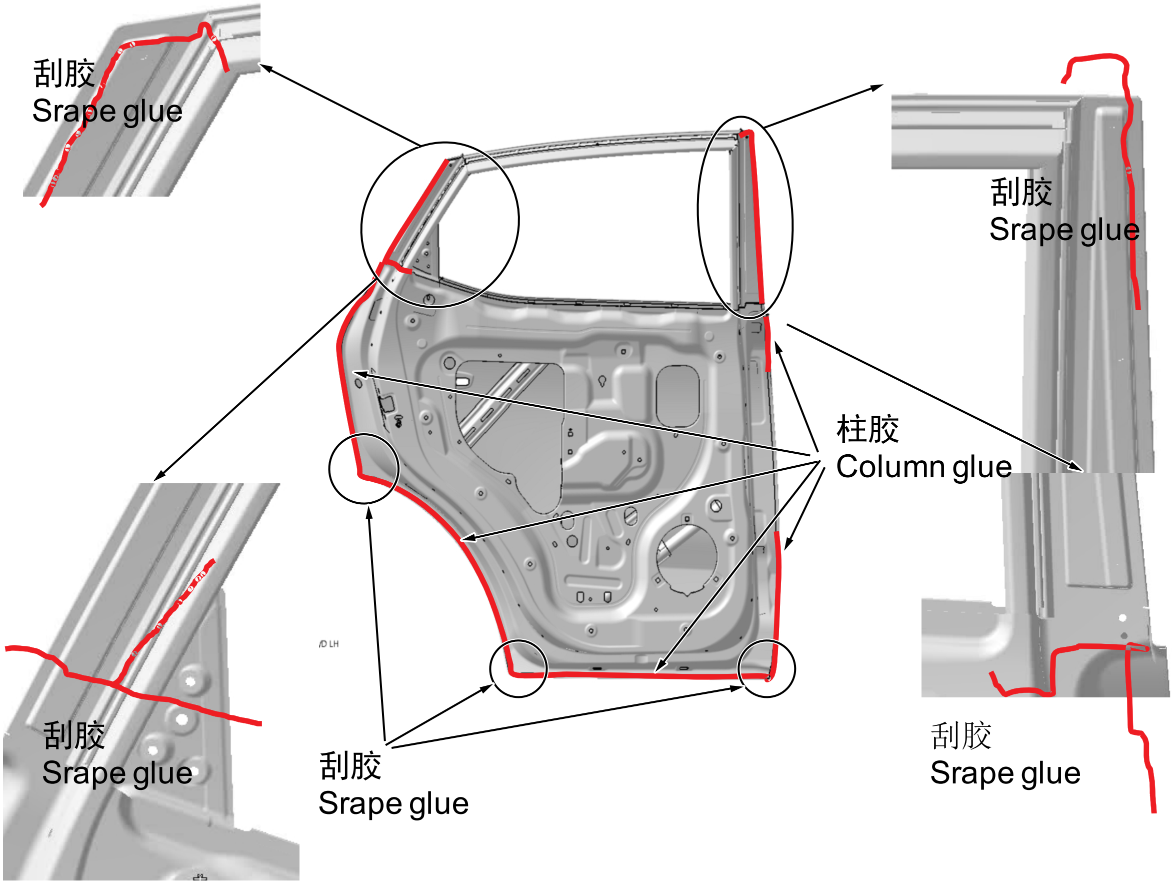
面积30*30mm

Protection and avoidance in the yellow frame Area: 30*30mm

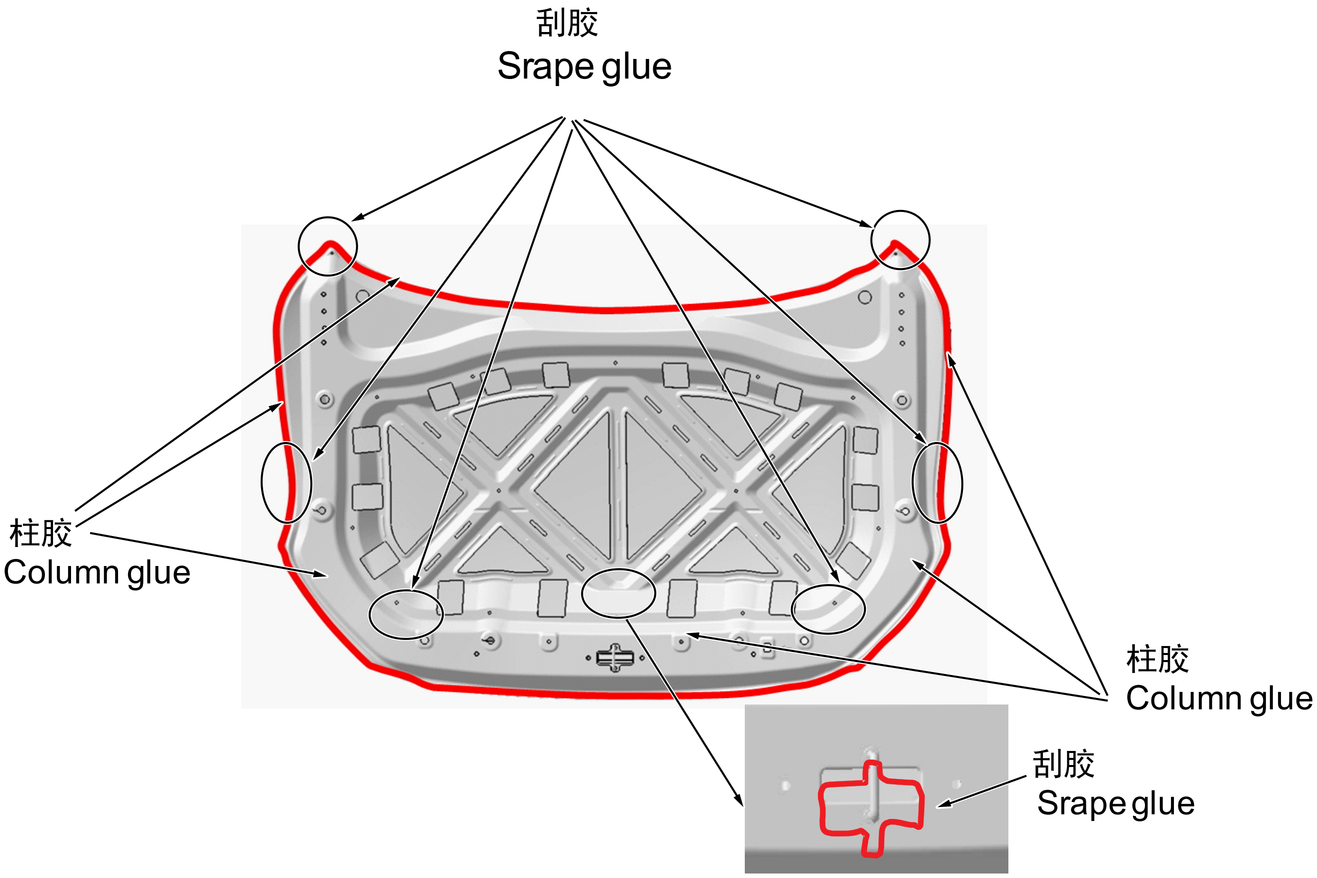
Front Door


刮胶
Srape glue
柱胶
Column glue

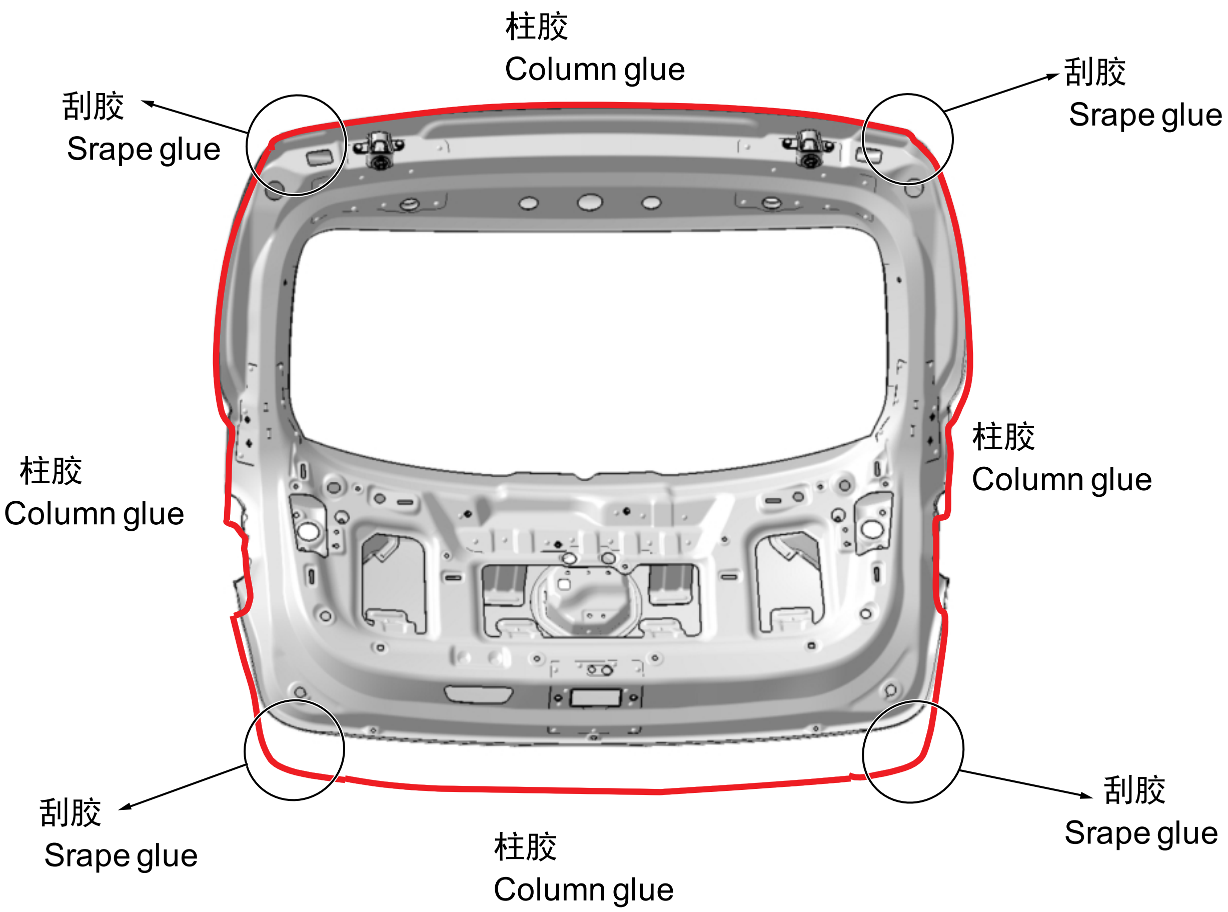
Rear Door


刮胶
Srape glue
刮胶
Srape glue
柱胶
Column glue
刮胶
Srape glue
刮胶
Srape glue
刮胶
Srape glue

Front Compartment Cover


刮胶
Srape glue
柱胶
Column glue
柱胶
Column glue
刮胶
Srape glue

Tail Gate


柱胶
Column glue
刮胶
Srape glue
刮胶
Srape glue
柱胶
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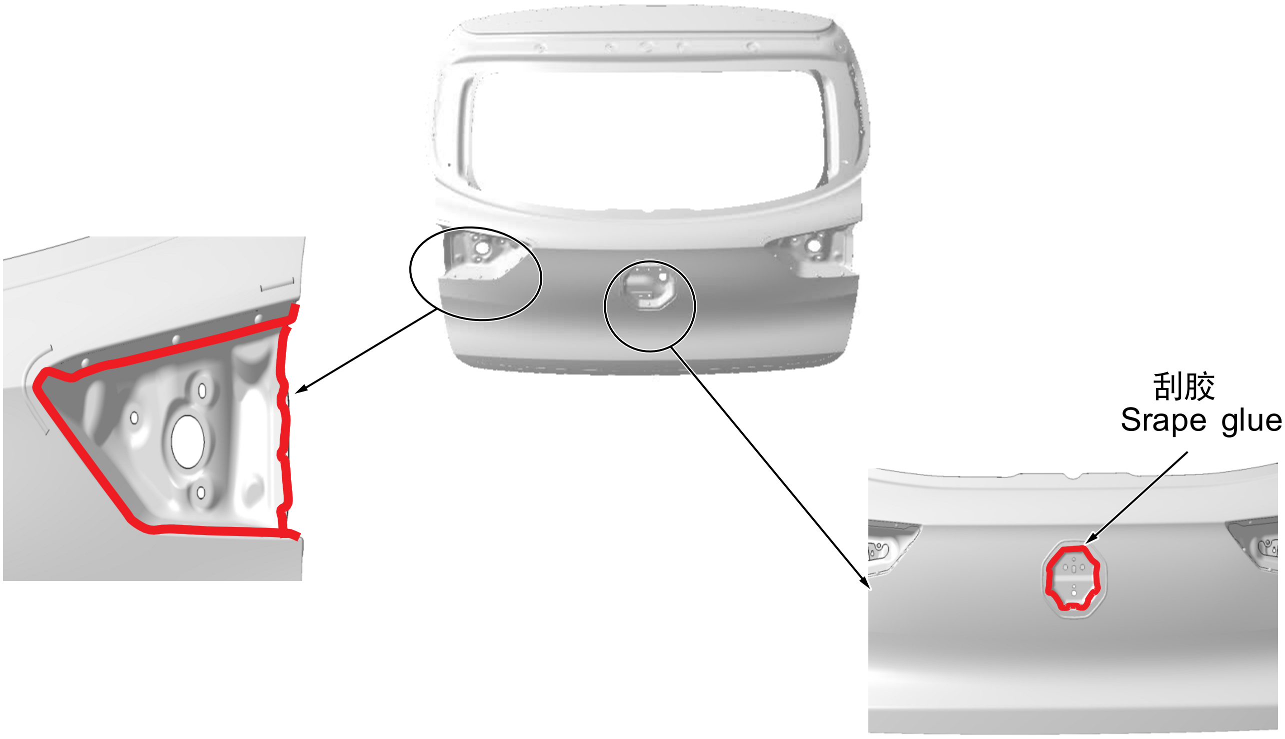
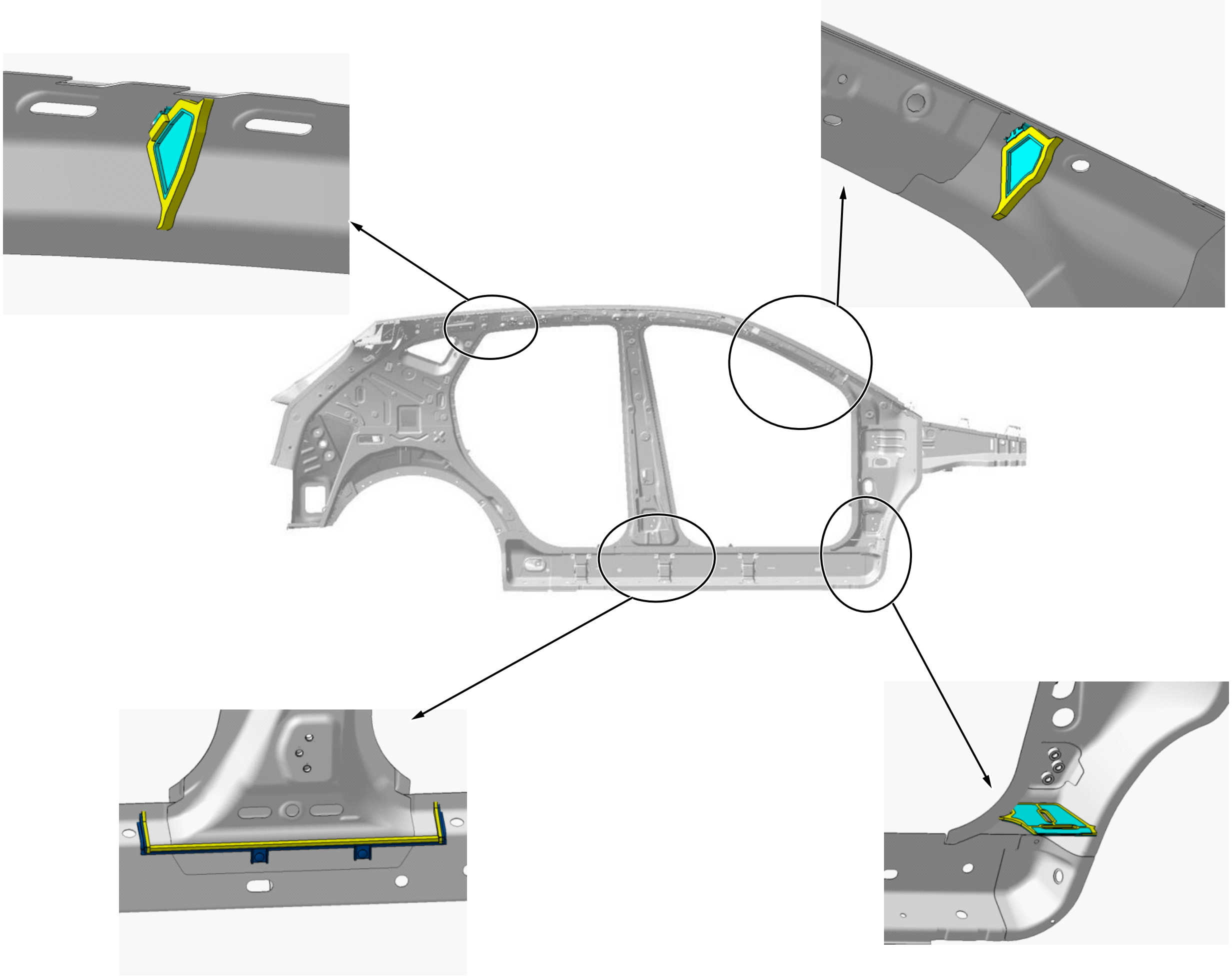
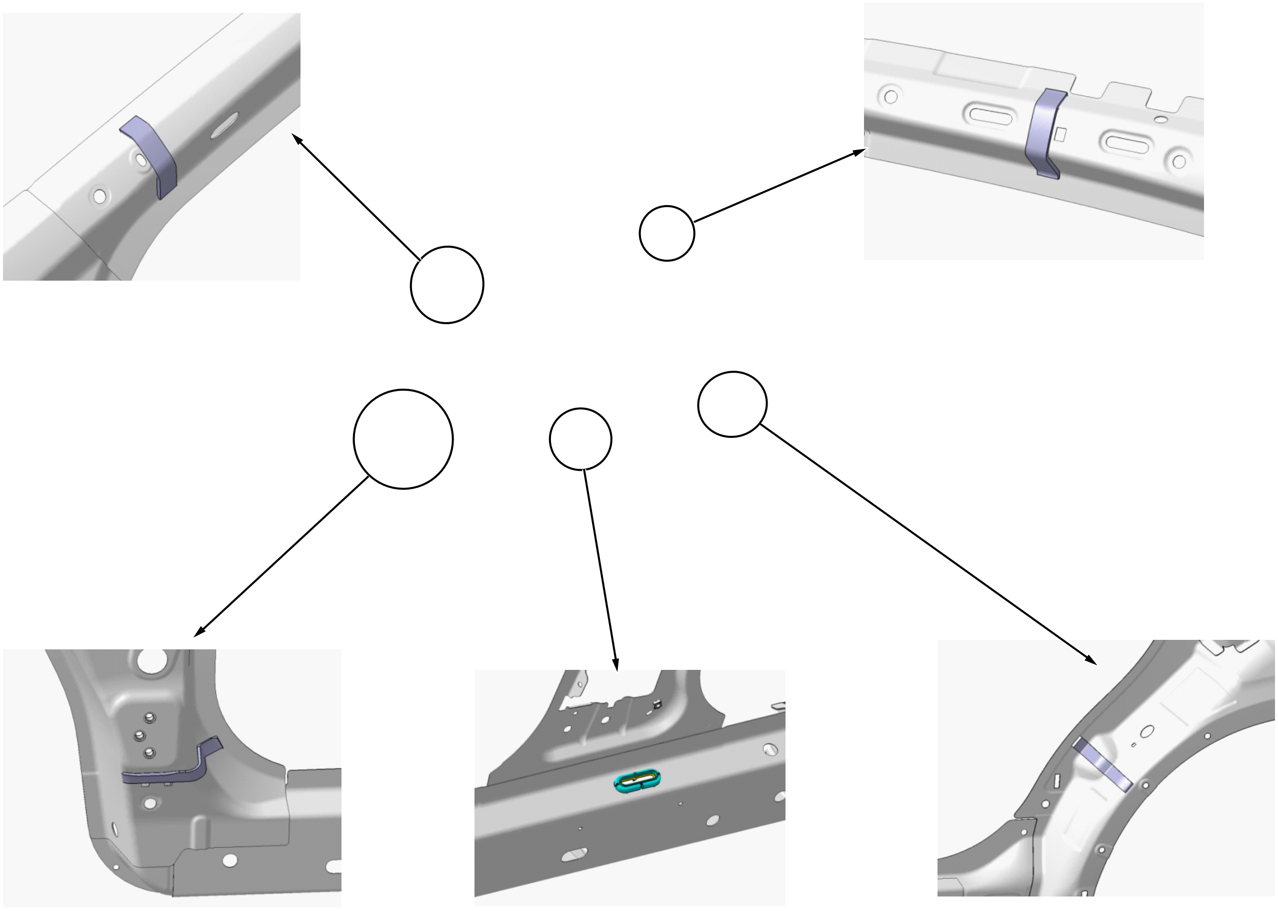
Column glue
刮胶
Srape glue
刮胶
Srape glue
柱胶
Column glue


刮胶
Srape glue

Foam Part Position Information

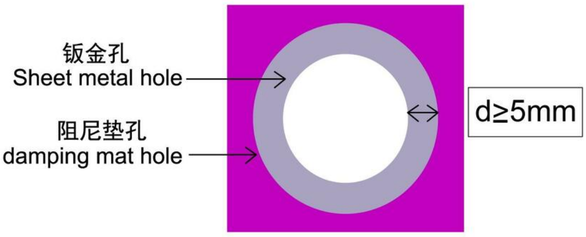




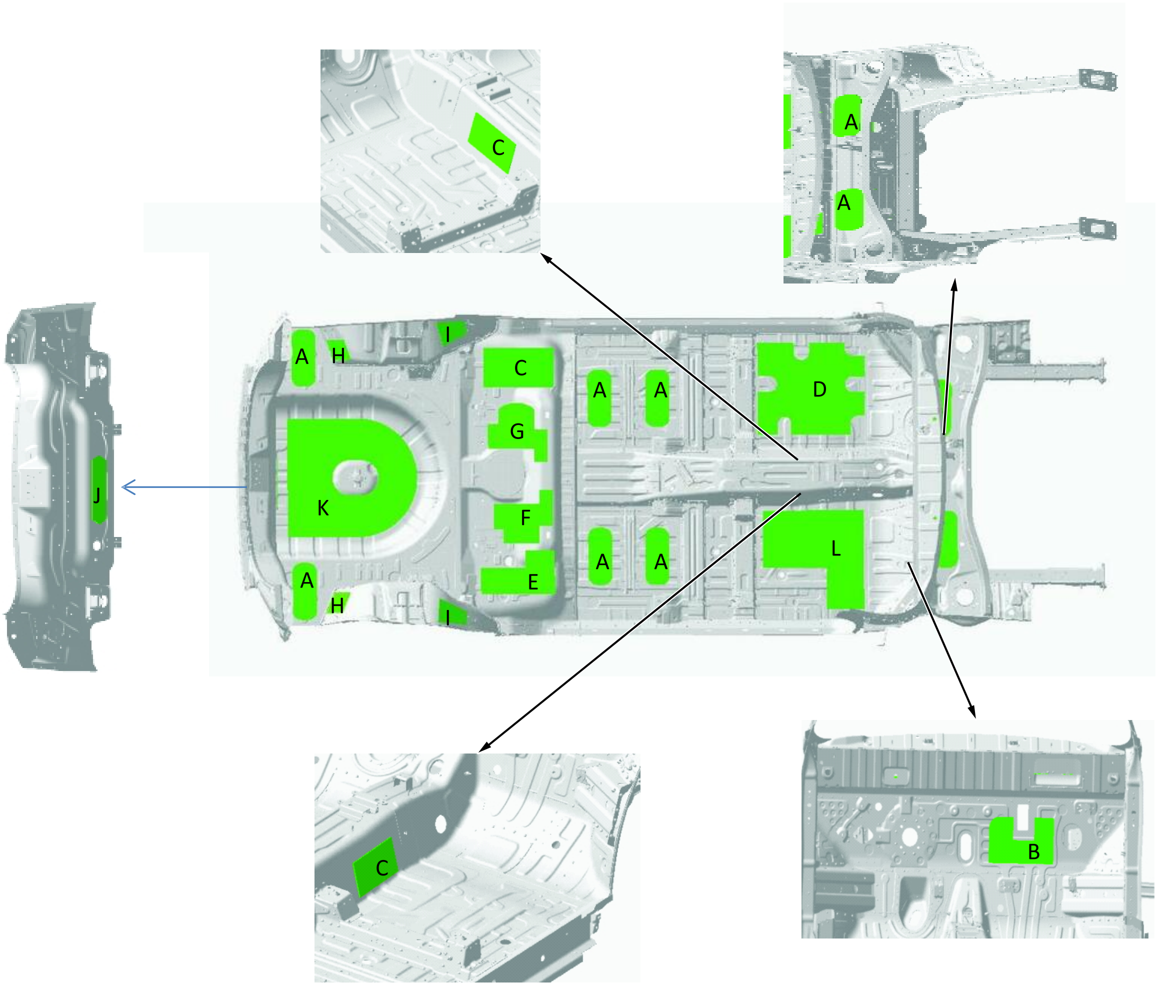
Information of Gasket Positions

Damping mats are used at the underbody panel, dash panel, rear end panel, rear wheelhouse and central passage. When making panel repairs or replacements in these areas, it is required to tailor new gaskets according to the size of original ones and paste them as the following instructions:

- Clean the positions on the panel where new gaskets are to be pasted.
- Follow the size requirements in the figure below.



Gasket Pasting Position Information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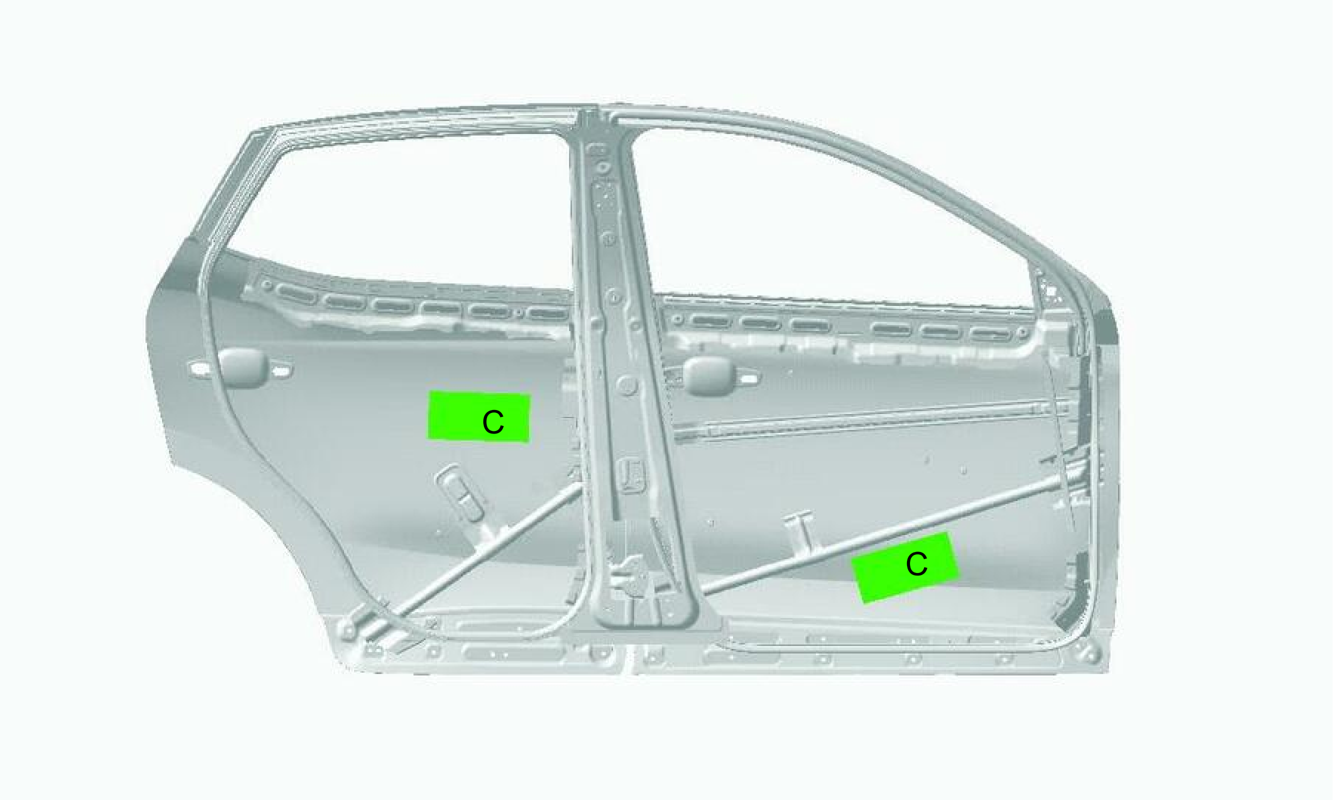
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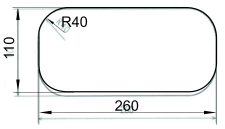
Gasket Size Information



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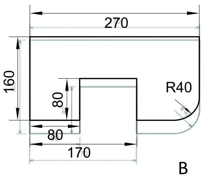
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R40
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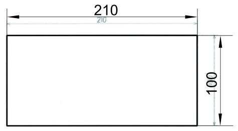
B



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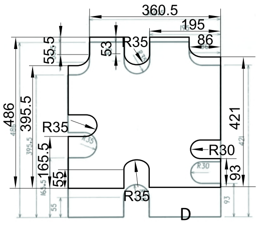
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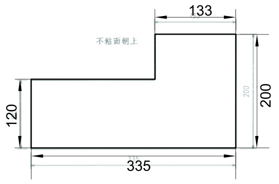
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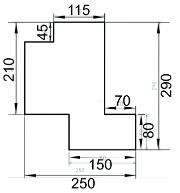
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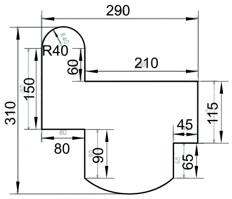
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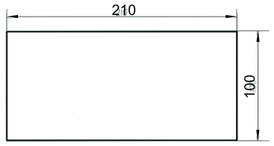
G



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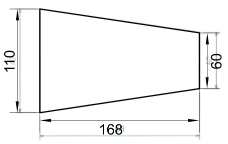

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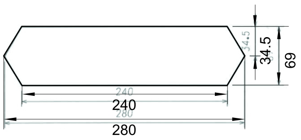
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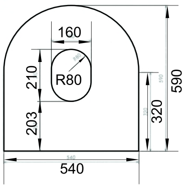
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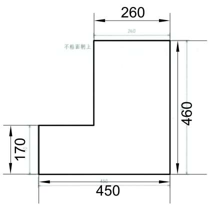
260
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170
450

L

Corrosion Protection

Overview

Factory Treatments

During production, vehicle bodies are treated with the following anti-corrosion materials:

- A galvanized steel sheet is used.
- Phosphate rust protection primer dip coat/electro-coat.
- Stone crash protection coating.
- A coating of underbody protection which is sprayed onto the underside of the main floor, rear floor and the rear wheel arches;
- An application of cavity wax which is sprayed into the sill panels, bodyside extensions and the lower areas of the door panels;
- A coat of protective wax is applied to areas of the wheel arch not covered by the liners.

Whenever body repairs are carried out, ensure the anti-corrosion materials in the affected area are repaired or renewed as necessary using the approved materials.

Precautions During Body Repairs and Handling

Take care when handling the vehicle in the workshop. Underbody sealers, seam sealers, underbody wax and body panels may be damaged if the vehicle is carelessly lifted.

When fitting accessories, ensure that the vehicle's corrosion protection is not affected, either by breaking the protective coating or by introducing a moisture trap.

Do not screw self-tapping screws directly into body panels. Fit suitable plastic inserts to the panel beforehand. Always ensure that the edges of holes drilled into panels, chassis members and other body parts are protected with a suitable zinc rich or acid etch primer, and follow with a protective wax coating brushed onto the surrounding area.

Do not attach painted metal surfaces of any accessory directly to the vehicle's bodywork unless suitably protected. Where metal faces are bolted together always interpose a suitable interface material such as weldable zinc rich primer, extruded strip, or zinc tape.

Due to the high temperatures generated by steam cleaning equipment, there is a risk that certain trim components could be damaged and some adhesives and corrosion prevention materials softened or liquefied. Adjust the equipment so that the nozzle temperature does not exceed 90°C(194°F). Take care not to allow the steam jet to dwell on one area, and keep the nozzle at least 300 mm from panel surfaces.

DO NOT remove wax or lacquer from underbody or underbonnet areas during repairs. Should it be necessary to steam clean these areas, apply a new coating of wax or underbody protection as soon as possible.

Maintenance Checks

Carry out the following operations to check bodywork for corrosion:

- With the vehicle on a lift, carry out visual check of underbody sealer for damage.
- With the vehicle lowered, inspect exterior paintwork for damage and body panels for corrosion.

Note: If the vehicle is dirty, it will need to be washed prior to inspection of bodywork.

The checks described above are intended to be visual only. It is not intended that the operator should remove trim panels, finishers, rubbing strips or sound-deadening materials when checking the vehicle for corrosion and paint damage.

1. With the vehicle on a lift, and using an inspection or spot lamp, visually check for the following:
   - Corrosion damage and damaged paintwork, condition of underbody sealer on front and rear lower panels, sills and wheel arches;
   - Damage to underbody sealer. Corrosion in areas adjacent to suspension mountings and fuel tank fixings.

   Note: In case no exposure of metal, the little bubble on underbody sealing material can be neglected.

   Pay special attention to signs of damage caused to panels or corrosion protection material by incorrect jack positioning.

Warning: It is essential to follow the correct jacking and lifting procedures.

2. With the vehicle lowered, visually check for evidence of damage and corrosion on all visible painted areas, in particular the following:
   - Front edge of front compartment cover;
   - Visible flanges of front compartment;
   - Lower body and door panels.

   Rectify any bodywork damage or evidence of corrosion found during inspection as soon as is practicable, both to minimise the extent of the damage and to ensure the long term effectiveness of the factory-applied corrosion prevention treatment. Where corrosion has become evident and is emanating from beneath a removable component (e.g. trim panel, window glass, seat, etc.), remove the component as required to permit effective rectification.

Underbody Protection Repairs

Whenever body repairs are carried out, ensure that full sealing and corrosion protection treatments are reinstated. This applies both to the damaged areas and also to areas where protection has been indirectly impaired, as a result either of accident damage or repair operations.

Remove corrosion protection from the damaged area before straightening or panel repair. This applies in particular to panels coated with wax, **PVC** underbody sealer, sound deadening pads, etc.

Warning: DO NOT use oxy-acetylene gas equipment to remove corrosion prevention materials. Large volumes of fumes and gases are liberated by these materials when they burn.

Note: *The device used for removing strong corrosion protection sealer can provide several speeds and efficiency. The scraper (not pneumatic chisel) driven by compressed air provides a relatively quiet mechanical method by using a very rapid reciprocating motion. Move the operating edge of the tool along with the workpiece surface to remove the sealing material.*

The most common method of removal is by means of a hot air blower with integral scraper. One of the most efficient methods is the rapid cutting 'hot knife'. This tool uses a wide blade and is able to be used easily in profiled sections where access is otherwise difficult.

Use the following procedure when repairing underbody coatings:

1. Remove existing underbody coatings.
2. After panel repair, clean the affected area with a solvent wipe, and treat bare metal with an etch phosphate material.
3. Re-prime the affected area.

Caution: DO NOT, under any circumstances, apply underbody sealer directly to bare metal surfaces.

4. Replace all heat-fusible plugs which have been disturbed. Where such plugs are not available use rubber grommets of equivalent size, ensuring that they are embedded in sealer.
5. Mask off all mounting faces from which mechanical components, hoses and pipe clips, have been removed. Underbody sealer must be applied before such components are refitted.
6. Brush sealer into all exposed seams.
7. Spray the affected area with an approved service underbody sealer.
8. Remove masking from component mounting faces, and touch-in where necessary.

After refitting mechanical components, including hoses and pipes and other fixtures, mask off the brake discs and apply a coat of approved underbody wax. The underbody wax must be reinstated following all repairs affecting wheel arch panels. The wax is applied over paints and underbody sealers. Remove old underbody wax completely from a zone extending at least 200 mm beyond the area where new underbody sealer is to be applied.

Note: Where repairs include the application of finish paint coats in the areas requiring underbody wax, carry out paint operations before applying wax.

Cavity Wax Injection

After repairs, always treat areas with an approved cavity wax. In addition, treat all interior surfaces which have been disturbed during repairs whether they have been treated in production or not. This includes all cavities and door interiors. It is permissible to drill extra holes for access where necessary, provided these are not positioned in load-bearing members. Ensure that such holes are treated with a suitable zinc rich primer, brushed with wax and then sealed with a rubber grommet.

Before wax injection, ensure that the cavity to be treated is free from any contamination or foreign matter. Where necessary, clear out any debris using compressed air.

Ensure that cavity wax is applied AFTER the final paint process and BEFORE refitting any trim components.

During application, ensure that the wax covers all flange and seam areas and that it is adequately applied to all repaired areas of both new and existing panels.

It should be noted that new panel assemblies and complete body shells are supplied without wax injection treatment. Ensure that such treatment is carried out after repairs.

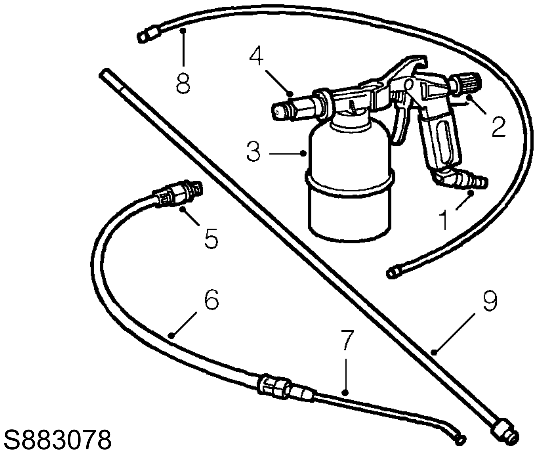
Effective cavity wax protection is vital. Always observe the following points:

- Complete all paint refinish operations before wax application.
- Clean body panel areas and blow-clean cavities if necessary before treatment.
- Maintain a temperature of 18°C (64°F) during application and drying.
- Check the spray pattern of injection equipment.
- Mask off all areas not to be wax coated and which could be contaminated by wax overspray.
- Remove body fixings, such as seat belt retractors, if contamination is at all likely.

- Move door glasses to fully closed position before treating door interiors.
- Treat body areas normally covered by trim before refitting items.
- Check that body and door drain holes are clear after the protective wax has dried.
- Keep all equipment clean, especially wax injection nozzles.

Anti-corrosion Products and Construction Equipment and Supplier

Cavity Waxing Machine and Technology



1. Air Inlet
2. Flow Control (adjust spray mode)
3. Pressure Cup (1L) Max. Pressure 140 PSI (9.7 bar, 9.84 kg/cm^3)
4. Spray Gun Connector
5. Nozzle Connection of Spray Gun Pipe
6. Retractable Spray Gun Pipe
7. Rigid Hook Rod (forward, conical spray)
8. Movable nylon spray gun pipe (1100 mm), 360° spray
9. Rigid spray gun pipe (1100 mm), 360° spray

For repair, if the waxing area is scratched, handle it again. Compressed air spray guns with the integral pressure cup and replaceable spray gun pipe shall be used.

According to the configuration of the add-on device, please strictly observe the following in use:

- When handling the film area, use the rigid or movable spray gun to give a 360° spray to ensure a maximum coverage;
- For restricted openings, use a hook nozzle to provide a more directional spray (narrow inside or short compartment);
- Wax is directly sprayed to the bottom surface through the smaller spray pipe of the spray gun, disconnect the liquid.

1100 mm rigid spray gun: the nozzle of the rigid spray gun gives a forward conical spray of 360° circumference. Though the wax film is sprayed by a single stroke, it can affect all surfaces of the compartment, internal and external spray can provide effective and complete wax coverage for the long/straight structure and compartment. By visual inspection, the rigid spray pipe also provides position accuracy for handling the shapely location.

Caution: Do not force the lance into access holes when using this attachment.

1100 mm movable nylon spray gun pipe: the elastic nylon spray gun shares the same type with the rigid spray gun, but it provides a stronger penetrability, it can be used to spray the inaccessible vessel of the curved section or nozzle. The main disadvantage of the elastic nylon spray gun is that it cannot precisely position the internal compartment. When spraying, spray outwards by the stroke of the spray gun. When pulling the spray gun out, retract it slowly and ensure the integrity of the finished spray. Do not pull the spray gun out with a rush. Ensure the nylon pipe of the spray gun is away from the edge and located in the hole so that wear of the nylon pipe can be avoided and the service life of the nylon pipe can be prolonged. Ensure the spray operation is stopped before removing the nozzle from the port. To assist in the completion of this step, use red paint to mark the rear of the nozzle (30 mm).

Hook Nozzle of Movable Spray Gun

The spray gun with rigid hook nozzle provides a forward spray, its conical spray is characterised by long range and good dispersion. The combination of these two features provides a good capability of orientation and a good effect on the short and narrow locations to be sprayed, besides, it can also be used for direct spray of the inner wheel arc, etc.

When using, place the smooth area at the end of the spray gun to form an angle of 180° with the location to be sprayed. For locations hidden in a box or hole, this helps to finish the spray successfully.

For general spray, arch the nozzle, and move from one end to the other as required, and ensure complete spray of the surface.

Note: Always clean gun after use with appropriate solvent to maintain efficiency.

Recommended Equipment

3M Schutz Pistol Spray Gun 08996 for Body: The pistol spray gun is constructed of the housing and machined light alloy, which is fitted by 3M bolts to the Schutz container.

3M Pneumatic Cartridge Pistol Spray Gun 08012: The direct feed pneumatic gun is used for the 3M cartridge product. It has a good performance in smooth spray, and an adjusting valve for additional control is provided.

3M pneumatic pistol spray gun-08006/7: direct feed pneumatic guns are used for the 3M product sealed in bags (spray gun 08006 is used for products of 200 ml and 310 ml in bags, and spray gun 08007 is used for products of different models in bags, including products of 600 ml).

Other applicable spray guns: heavy pistol 08013.

3M glue gun 08190: this model is used for 3M structure gluing 08120.

3M cavity wax film glue gun 08997: This machine can load a tank of 1L, it is equipped with a hose of 750 mm. The approved system can be obtained from the 3M surface repair coefficient. The Cooper Greux falcon preliminary spray gun (airtight) is used for spraying transit wax, which has a 5L container with a complete manual pump and achieves effective spray without compressed air or additional operation. Use of the nozzle, spray gun, hose length and a trigger valve with complete filter can facilitate the application. Other applications include general service, wax spray liquid and paint spray. The operation may use heavy materials. All components can be replaced and configured with different nozzles.

SATA Schutz gun UBE: the SATA gun is used for retreatment of the bottom vehicle coated with protective paint, the spray gun is in the special one-way container (1L). Thread parts (inner thread of the gun) conform to the standard of most of the Schutz product packages.

Specification of UBE:	
Air consumption	7 ft3/min (200 litres/min) @ 45 lbf.in2
Weight:	23.3 oz (220 grams)

SATA HKD1 waxing machine: used for retreatment of cavity wax. SATA HKD1 device consists of the following parts: high quality forging, gun with 1L pressure feed container, retractable nylon spray gun pipe, 1100 mm steel pipe and hook pipe. The replacement quick connector of the standard parts can be used to transfer the pipe. Each spray gun is provided with a complete nozzle machined for spray purpose, which is applicable for the compartment to be treated.

Note: Always clean gun after use with appropriate solvent to maintain efficiency.

Contact information of 3M supplier

3M (China) Co. Limited

Address: No. 38 building, Maxdo Centre, No. 8 Xing Yi Road, Shanghai, China

Zip Code: 200336

Tel: 86 21 62753535

Website: www.3M.com

Zinc Spray

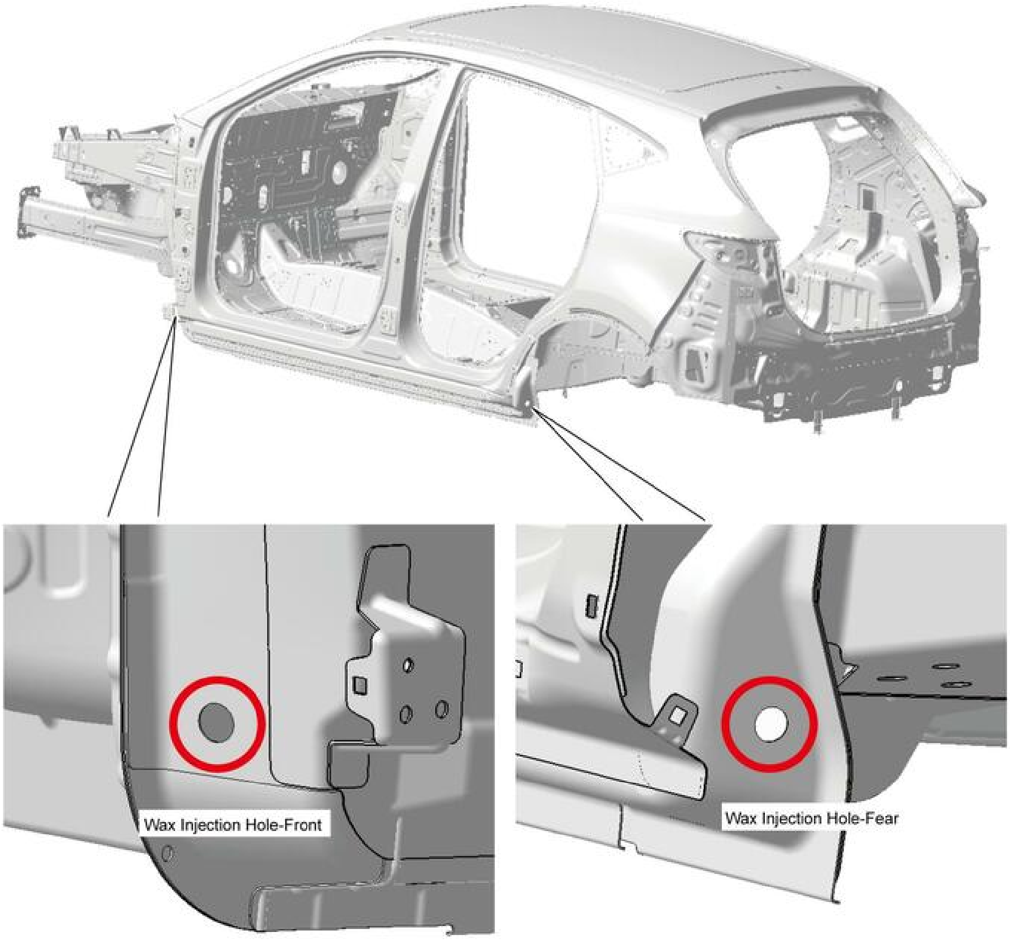
For locations needing MIG/MAG welding or spot welding, apply the primer rich in zinc to the area near the connector surface, and do not process the welding area.

Zinc spray is used for the following two situations:

- The cutting surface or damaged coating of the sheet metal panel requires zinc spray;
- Zinc shall be sprayed on the contact surface of the welding to prevent rust of the spot welding.

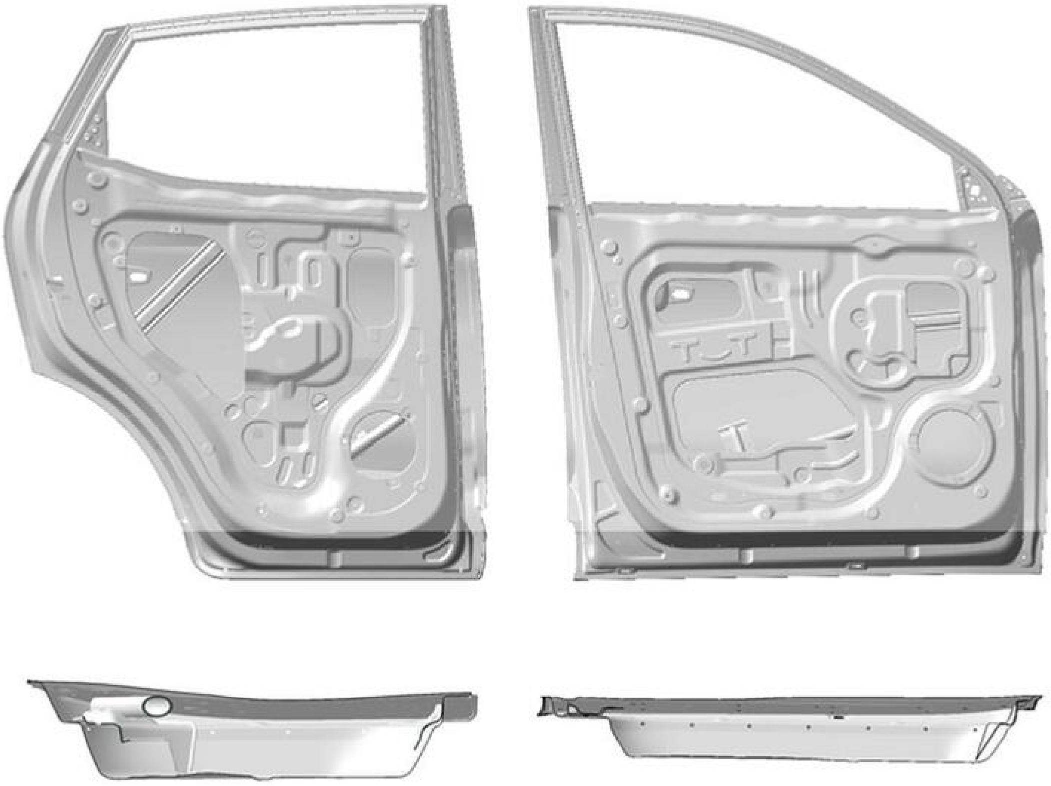
Information of Cavity Wax Application

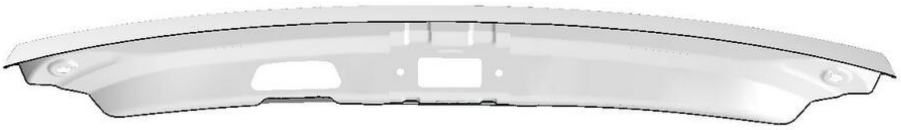
Doorsill


Wax Injection Hole-Front
Wax Injection Hole-Fear

Door and Luggage Compartment Lid

Spray cavity wax from the process hole inside the door and luggage compartment lid to cover the internal sheet metal and frame with a layer of protective film. Most of the cavity wax deposit is at the bottom of the sheet metal cavity, and it will be finally drained from the hole at the bottom.





Chassis Adhesive

Function of chassis adhesive:

- Improve the stone-chipping resistance of the underbody;
- Improve the corrosion resistance of the underbody sheet metal;
- Improve the seam sealing performance of the underbody sheet metal;
- Improve the sound insulation performance of the underbody.

Caution: Ensure that suspension units, wheels, tyres, power unit, exhaust and brakes (including all mounting points) are shielded prior to application of fresh underbody sealer.

Operation procedures for chassis adhesive:

1. Cleaning: to ensure the maximum viscosity of the product, the underbody surface shall be clean and free from any dirt, oil stain, grease or wax residue.
2. Inspection: before operation, thoroughly inspect the underbody for any potential damage or rust. Key location: wheel arch, lower side, seam and overlap joint.
3. Dust elimination: eliminate the rust spot on the underbody with a shovel or wire brush. Pay particular attention to the inaccessible locations, for example, wheel frame, overlap or seam.
4. Check the type of the underbody coating: check the type of the underbody coating and select a suitable product.
5. Read use instruction: before operation, please carefully read the instruction on the package of the product and view the technical data sheet. Read the safety instruction in the Material Safety Data Sheet carefully so that you can minimize some potential risk and hazard and achieve the optimum effect.
6. Use cross spray technique: spray the rust prevention product at a distance of around 30cm, spray in the horizontal direction first, then spray the stiffener of the base plate from a proper angle (cross spray technique). To achieve an optimum thickness (1.5mm) of the wet film, at least three sprays shall be done.
7. Drying time: a specific drying time shall be defined, the coating material shall adhere to the underbody firmly and permanently. Different solutions and different coating thicknesses may require different drying time. Products with high volatile solution require 2hr drying time at least.
8. Clean spray gun: use spray gun detergent to clean the spray gun immediately after use.

Welding Process

Welding Process Overview

Characteristics of welding process:

- It is applicable to any shape and can be used to connect the integral body, and the vehicle body integrity can be maintained after welding;
- Mass reduction can be achieved due to lack of the connecting parts;
- Good sealing performance for air and water;
- High production efficiency;
- The welding connector strength is affected by the skill level of the operator;
- Excessive heating may cause surrounding panels deformation.

For modern vehicles, the body welding repair usually adopts MAG shielded arc welding, resistance spot welding and soldering. For the body panel welding repair, an optimum welding method that will not reduce the original strength and durability of the body shall be applied depending on the specific situations, spot welding or inert gas welding is preferred.

MAG Shielded Arc Welding

MAG shielded arc welding is mainly used for welding high strength, low alloy steel body and aluminum casting, etc. Advantages of the MAG shielded arc welding include:

- Easy operation;
- This method can melt the base metal completely, low current can be used to weld thin metal, which can diminish damage to the adjacent area strength;
- Stable and controllable arc;
- Suitable for welding locations with gap and misalignment;
- Temperature and duration of the welding is controllable, short heating time of the welding zone reduces fatigue and deformation of the base metal.

Typical welding locations and methods:

- Butt welding. Fit two adjacent metal edges together, fit mutually along the two metal panels or weld the butted edge;
- Overlap welding. Weld two overlapping metal panels;
- Plug welding. Punch a hole on one or several exterior workpieces, arc passes through the hole before entering into the interior workpiece, and the hole is filled with the melting metal;
- Spot welding. When the wire feed timing pulse is triggered, current will be introduced into the two metal panels to be welded.

Resistance spot welding

The resistance spot welding is the most common method for welding the integral body. This method can be used for the non-deformable thin steel sheet on the body which requires a high welding strength. Suitable for roof, window, doorsill and external components, etc. The quality of the resistance spot welding depends on the voltage, current, pressure time and thickness of the metal panel to be welded, etc, the details are as follows:

- Material and cleanness of the weldment: the location between the weldments or the contact point between the weldment and the electrode shall be clean;
- Electrode pressing force: insufficient force can cause spatter on the contact point; excessive force can generate large current, but it will lead to small welding spot diameter and penetration due to increase of the heat distribution zone;
- Welding current: the welding spot diameter and welding strength increase with the current, and large current and small pressure may also lead to spatter between the panels; the spatter will be otherwise minimized;
- Welding time: long welding time will cause much heat, large diameter and deep penetration of the welding spot. However, prolonged welding time will lead to electrode impress and thermal deformation rather than increase of the welding spot.
- Arrangement of the welding spot: the gap and margin of the welding spot (distance between the spot and the panel edge) is also crucial for determining the welding spot strength. Welding spot gap decrease can improve the weldment connection strength, but the effect is actually limited. Excessive gap may cause the welding current to transfer through the last welding spot or leak, then the added welding spot will not strengthen the connection strength of the weldment any more, and it will have an adverse impact, therefore, the gap of the welding spot shall be beyond the area of current leak.

Correct welding sequence shall be applied for the resistance spot welding, continuous welding in one direction is generally not allowed, when the electrode tip is hot and discolours, stop welding and allow it to cool down. To avoid crack due to stress concentration, do not weld the boundary of the corner.

Welding Protection Measures

Electronic Control Unit

Before welding repair is operated, in consideration of the electronic control unit (**ECU**) refitted on the vehicle, the following protection measures must be followed. The plentiful heat and sharp vibration produced during these operations may damage the electronic control unit.

When disconnect or remove the airbag control module **SDM**, pay special attention to the following proper protection measures.

Protection Measures for Assistant Protection System

Implement and remove or replace any item related to the assistant protection system (**SRS**), be especially careful and comply with proper protection measures.

Equipments

When starting any test on the vehicle, ensure that the related test equipments work normally and all harnesses and connectors are in good state. This is especially important to the electronic control unit.

Seat Belt Rivet Joint

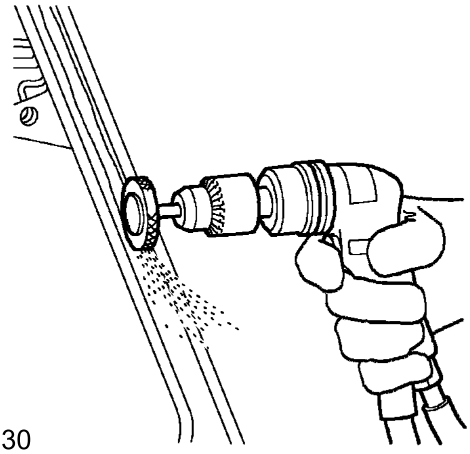
Seat belt rivet joint is crucial for safety. When repairing these areas, it is important to follow the following design specifications. Note: High strength low alloy steel (**HSLA**) can be used at the installation position for seat belts.

Try best to use the original production assembly, including rivet joints of seat belts, or the layout of cutting line should not interfere with the original rivet joints of seat belts.

Carefully check the welding quality of the jointing for seat belts rivet joints within 250mm, including the spot welding spacing.

Welding Parts Remove

1. Expose the resistance spot welding. Use a rotary bowl grinder or a wire brush installed into the air drill, or manual wire brush for the spot welding is not obvious.



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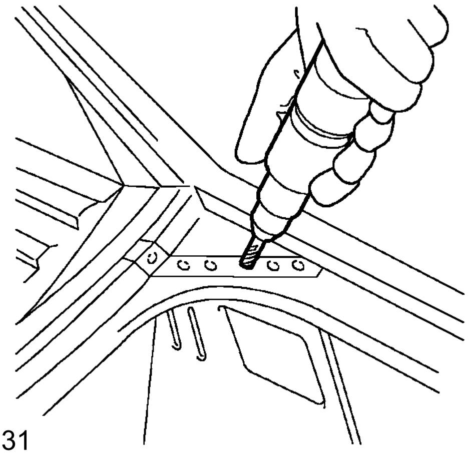
Caution: In wheel arch areas it may be necessary to soften underbody coating, using a hot air gun, prior to exposing spot welds.

2. The drill or clamping platoon welder for spot welding can be used to remove the welding spot.



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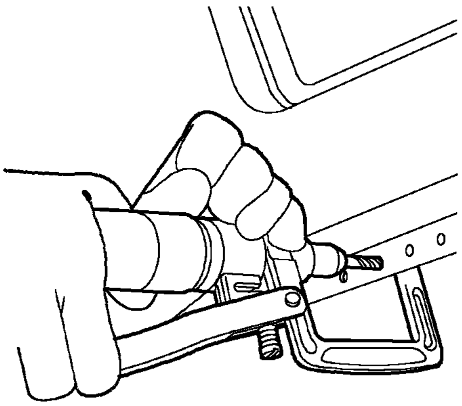

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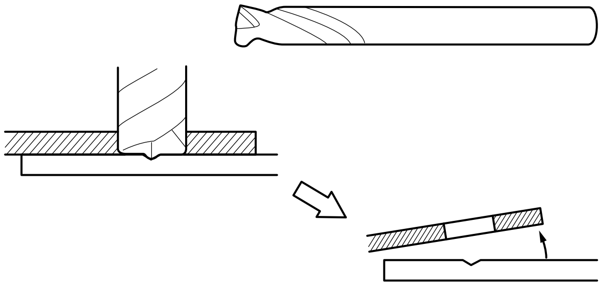
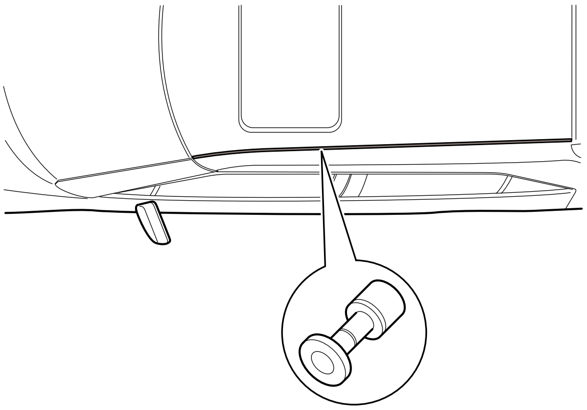
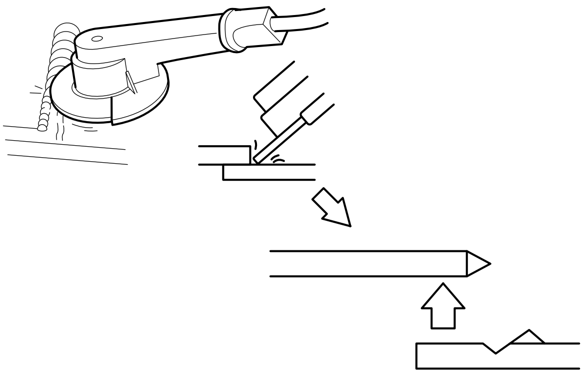


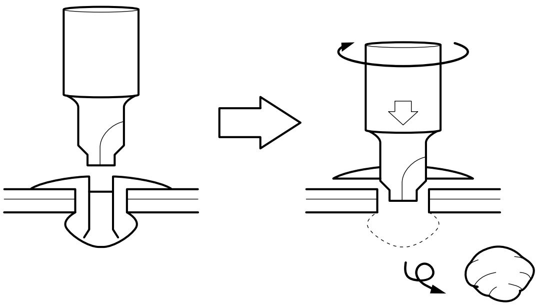
3. Location for laser welding: use grinder and grinding disk.



4. CO_2-MAG Arc Welding Location

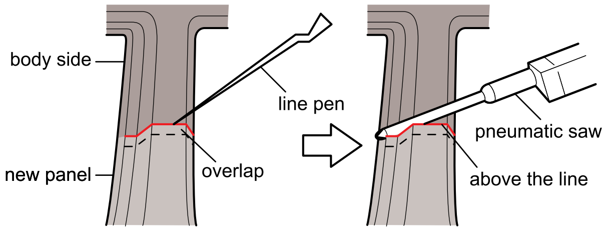


5. Rivet Junction

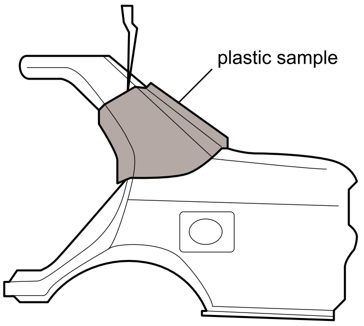


6. Big panel cutting

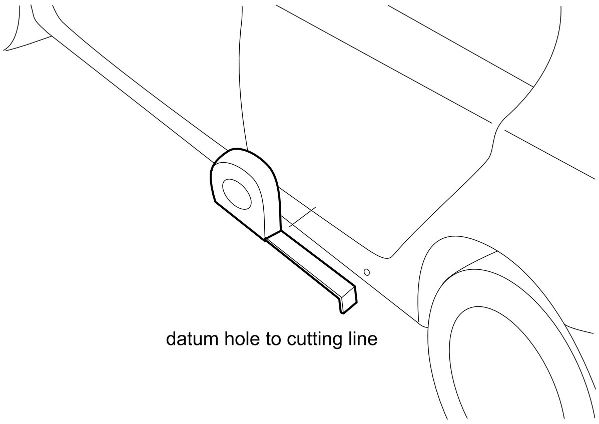
- a. Cutting by edge of steel panel


body side
line pen
pneumatic saw
new panel
overlap
above the line

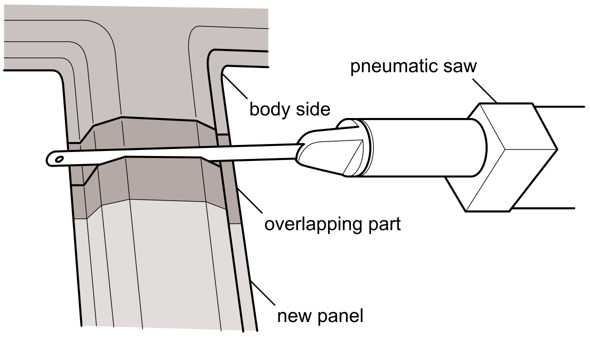
- b. Plastic sample panel cutting


plastic sample

- c. Dimension measurement

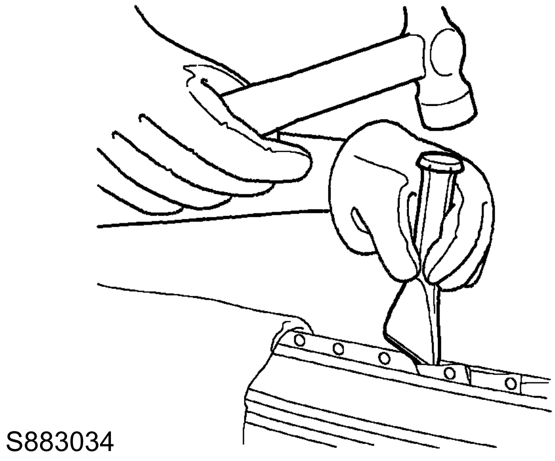

datum hole to cutting line

- d. Overlap cutting


pneumatic saw
body side
overlapping part
new panel

Caution: On certain panel joints MIG welds and braze should be removed using a sander where possible, before cutting out the panel bulk.

7. Separate the electric welding point with hammers, base plate chisels and pincers, and remove the penal scraps.



OEM Welding Information

Welding Identification

●

—2 layers of welding

▲

—3 layers of welding

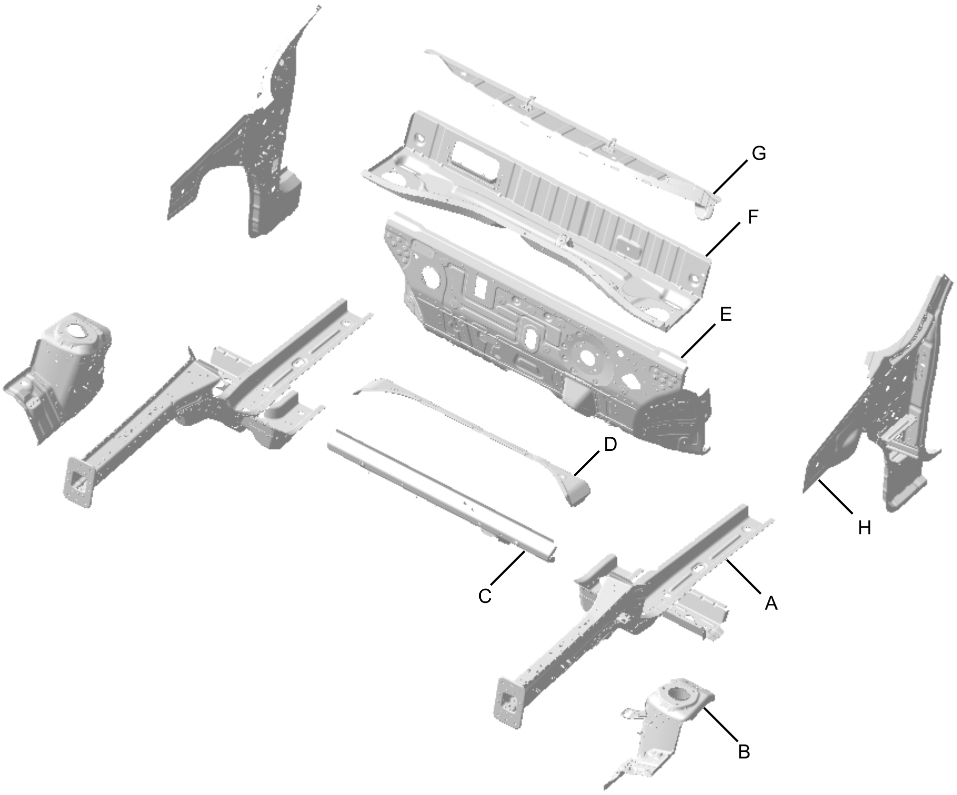
▬

—MAG welding/CMT welding

Welding Information of Main Parts

Front Compartment

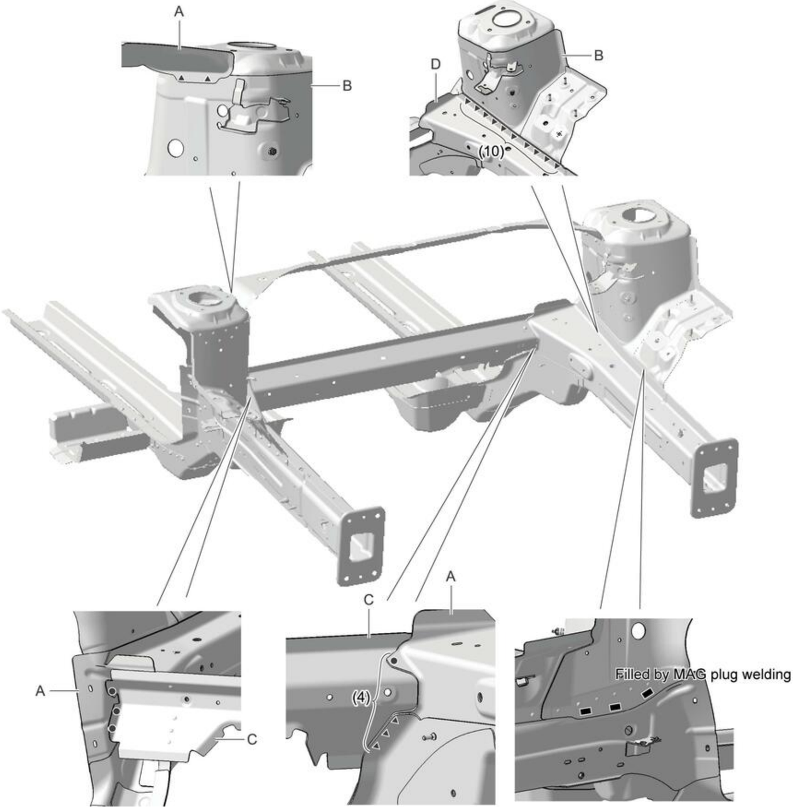
Structure



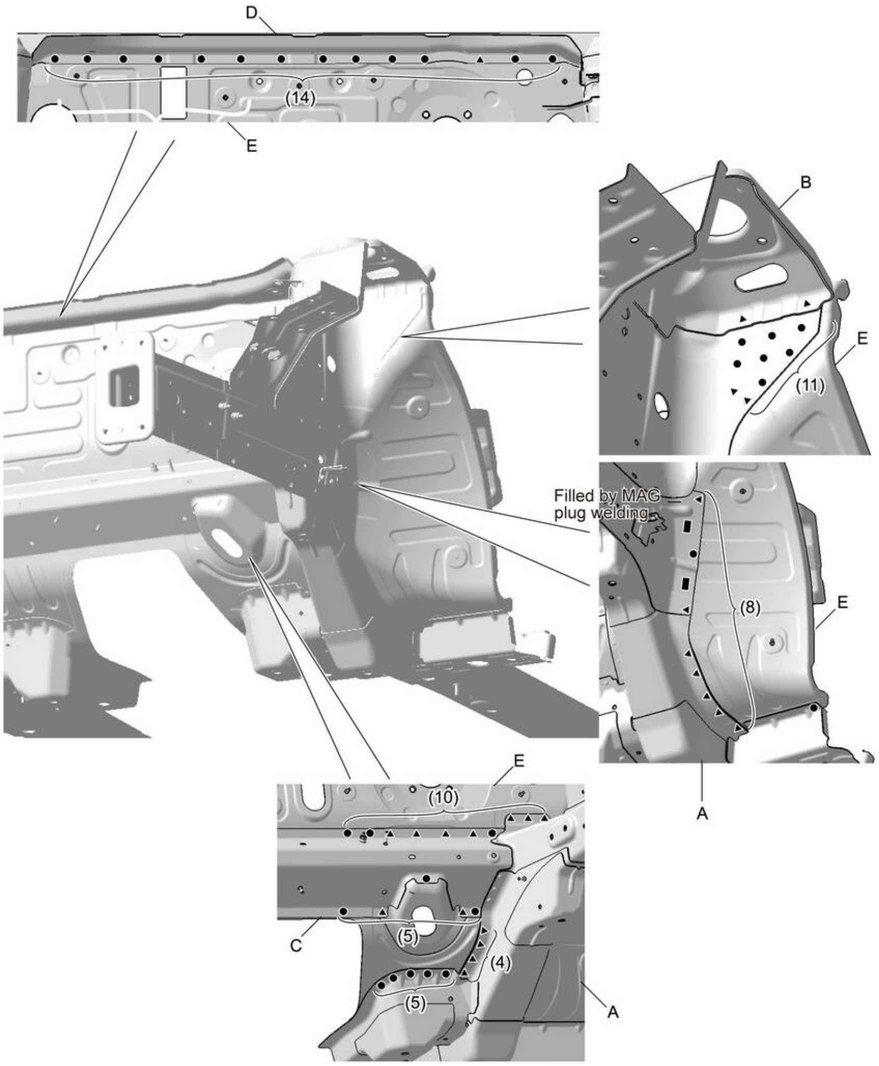
A— Front Longitudinal Beam Assembly
B— Front Wheelhouse Panel Assembly
C— Dash Panel Lower Beam Assembly
D— Dash Panel Upper Beam Assembly
E— Dash Panel Assembly
F— Dash Panel Lower Panel Assembly
G— Dash Panel Upper Panel Assembly
H— Dash Panel Side Panel Assembly

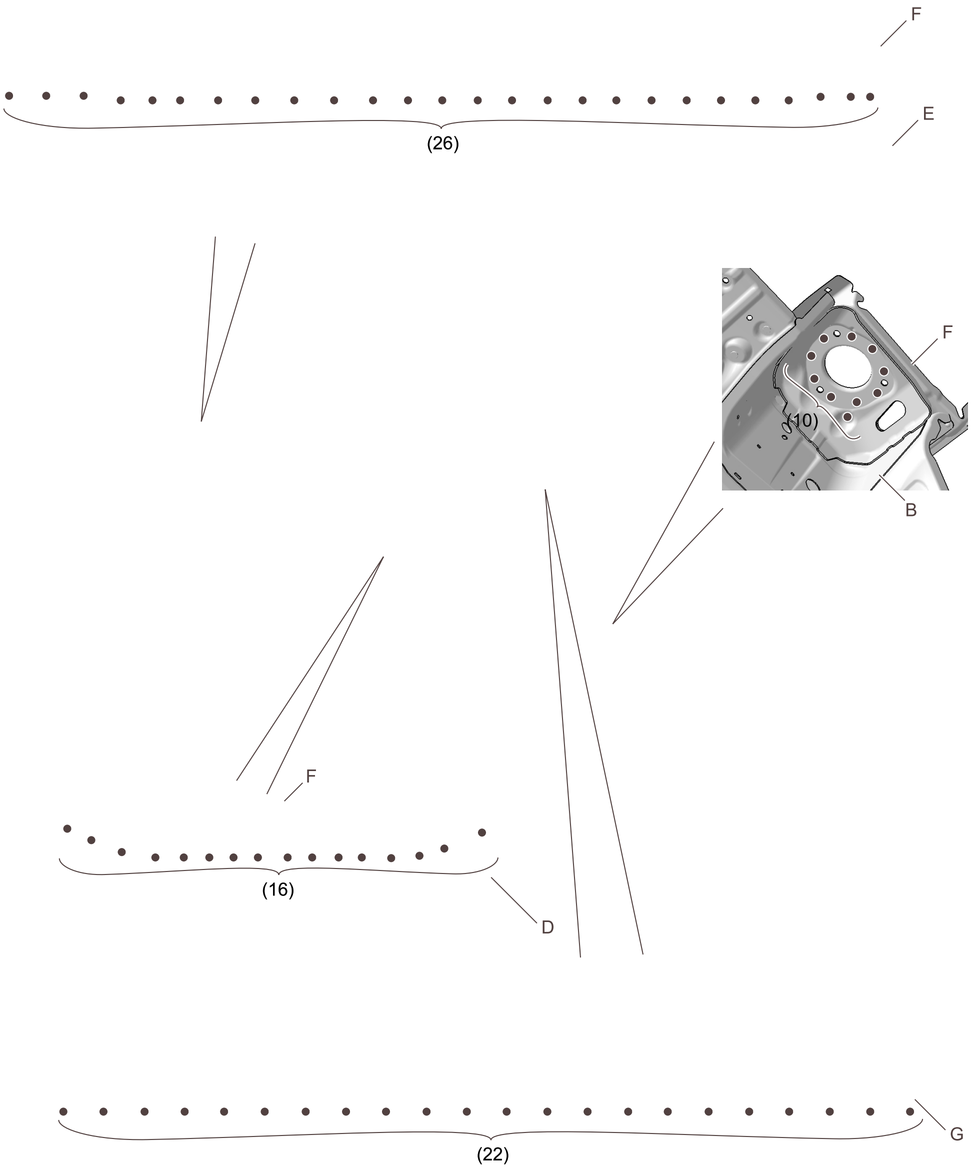
Welding

1. Weld the front left and right wheelhouse panel (B) assembly with the left and right front longitudinal beam assembly (A), and then weld the dash panel lower beam assembly (C) with the dash panel upper beam assembly (D);

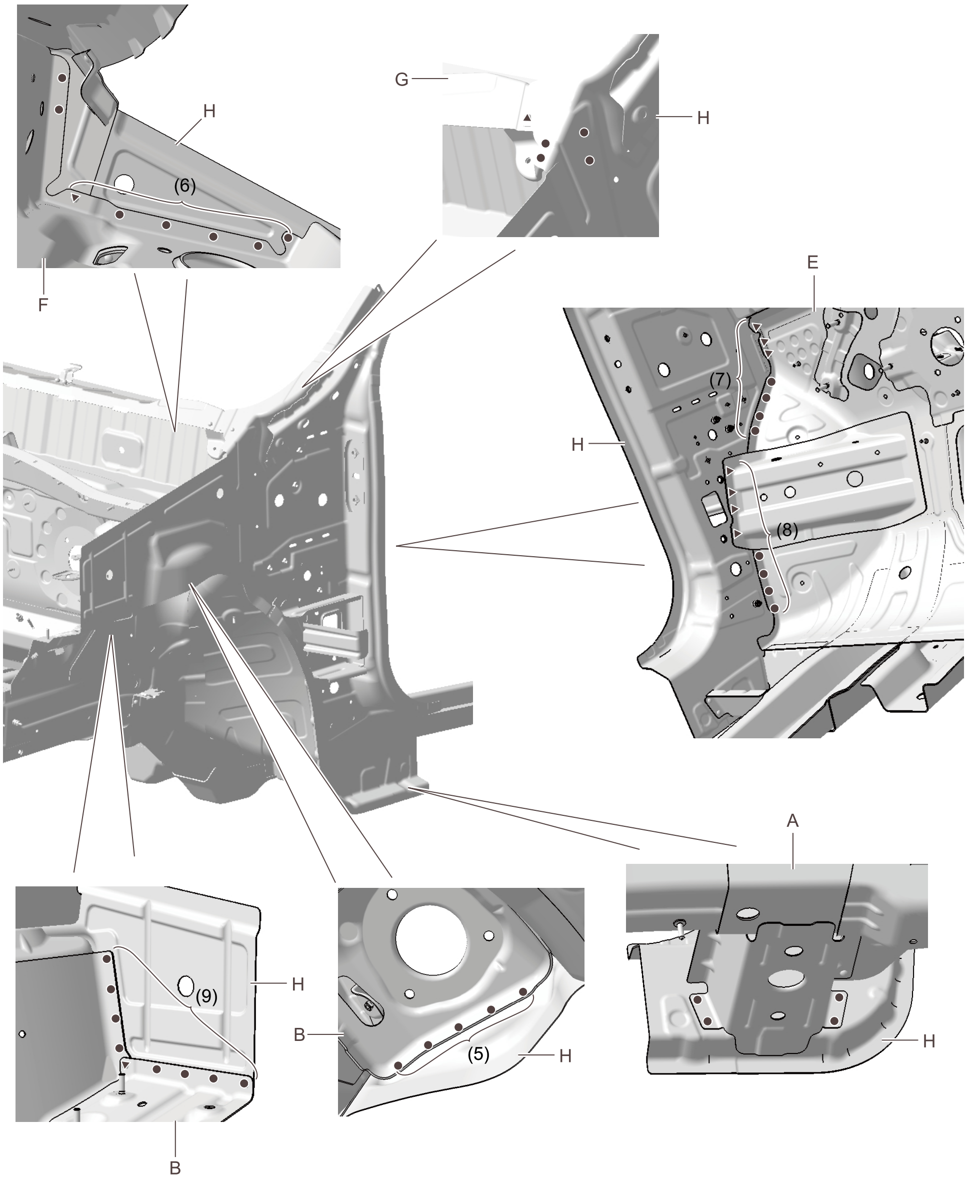

A
B
D
B
(10)
A
C
C
A
(4)
Filled by MAG plug welding

2. Weld the dash panel assembly (E), dash panel lower panel assembly (F) and dash panel upper panel assembly (G) with the front longitudinal beam frame assembly;


D
(14)
E
B
E
(11)
Filled by MAG plug welding
(8)
E
A
E
(10)
C
(5)
(4)
(5)
A

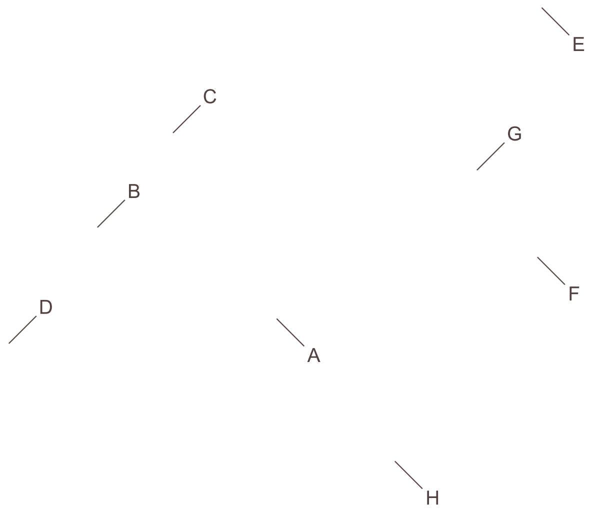

F
E
(26)
F
(10)
B
F
(16)
D
(22)
G

3. Finally, weld the dash panel side panel assembly (H).


H
(6)
F
G
H
E
(7)
H
(8)
A
H
(9)
H
B
B
(5)
H

Rear Floor

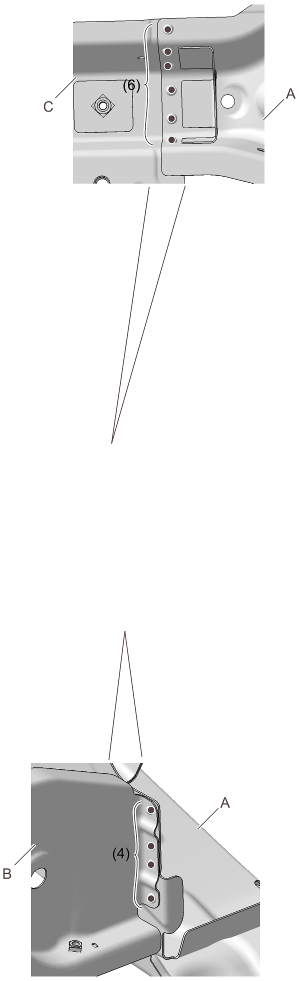
Structure



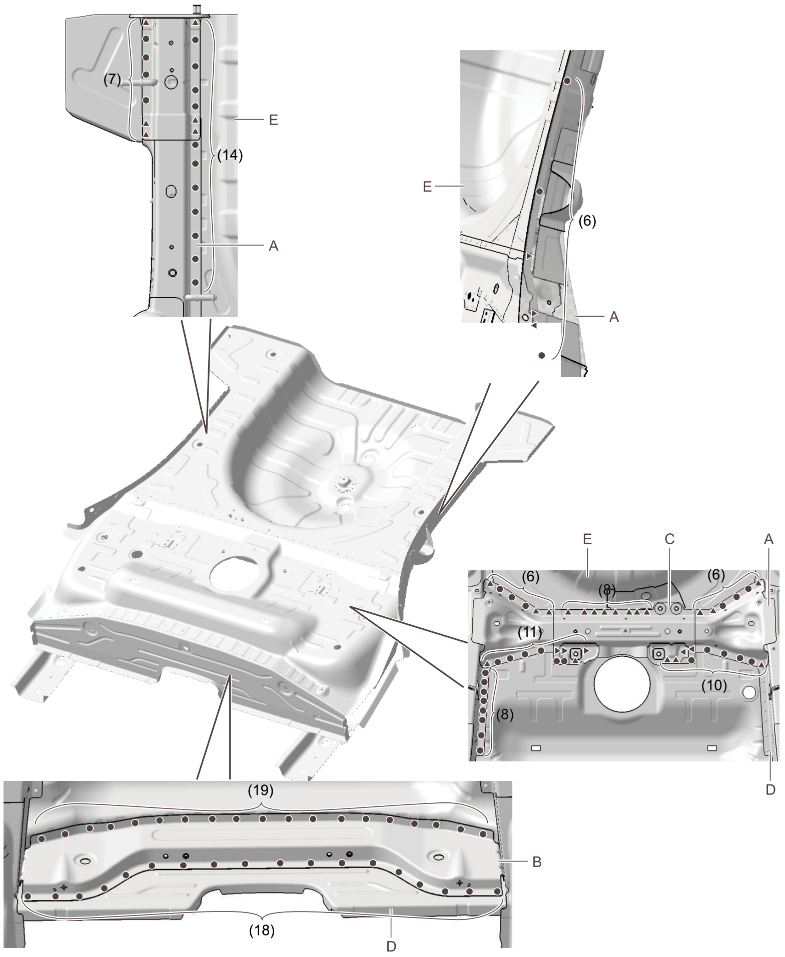
A— Rear Longitudinal Beam Assembly
B— Heel Board Beam Assembly
C— Rear Floor Beam Assembly
D— Rear Seat Plate Assembly
E— Spare Wheel Compartment Assembly
F— Rear Wheelhouse Assembly
G— Rear Wheelhouse Support Plate Assembly
H— Rear Door Sill Extension Panel

Welding

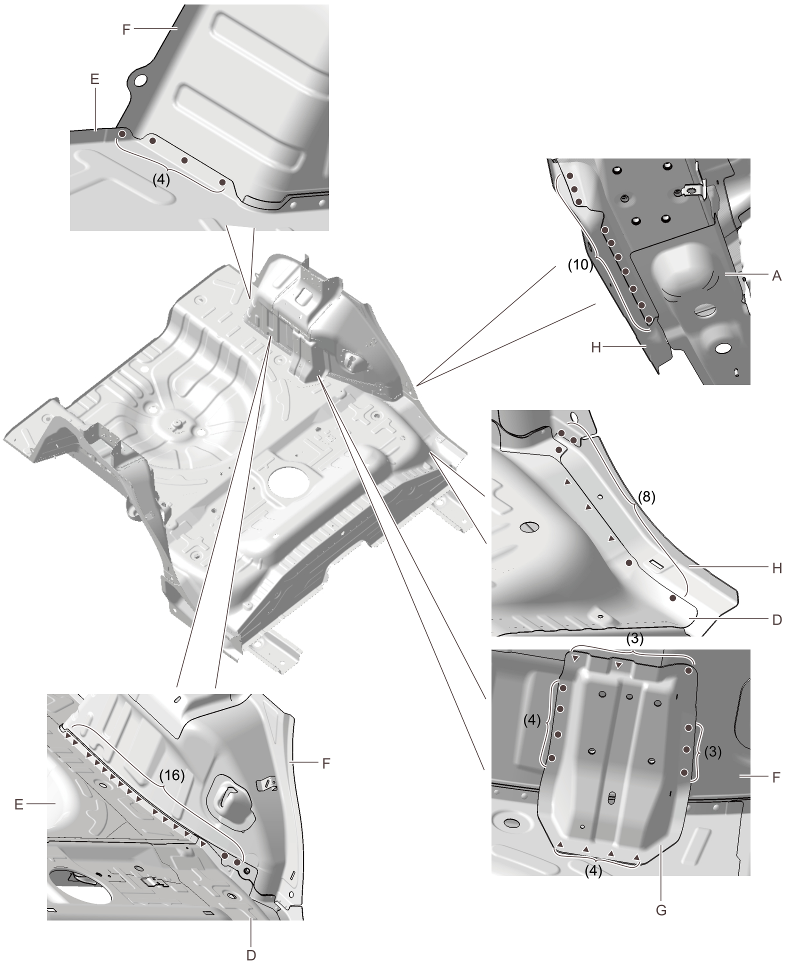
1. Weld the heel board beam assembly (B) and rear floor beam assembly (C) with the left and right rear longitudinal beam assembly (A);



2. Weld the rear seat plate assembly (D) and spare wheel compartment assembly (E) with the rear longitudinal beam frame assembly;

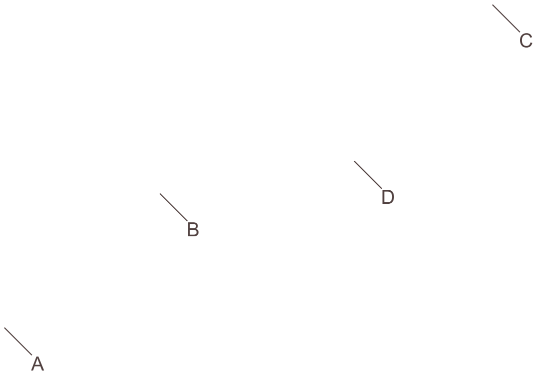

(7)
E
(14)
A
E
(6)
A
E
C
A
(6)
(8)
(6)
(11)
(10)
(8)
D
(19)
B
(18)
D

3. Finally, weld the rear wheelhouse assembly (F), rear wheelhouse support plate assembly (G) and rear door sill extension panel (H).


F
E
(4)
(10)
A
H
(8)
H
D
(3)
(4)
(3)
F
(4)
G
(16)
F
E
D

Lower Body

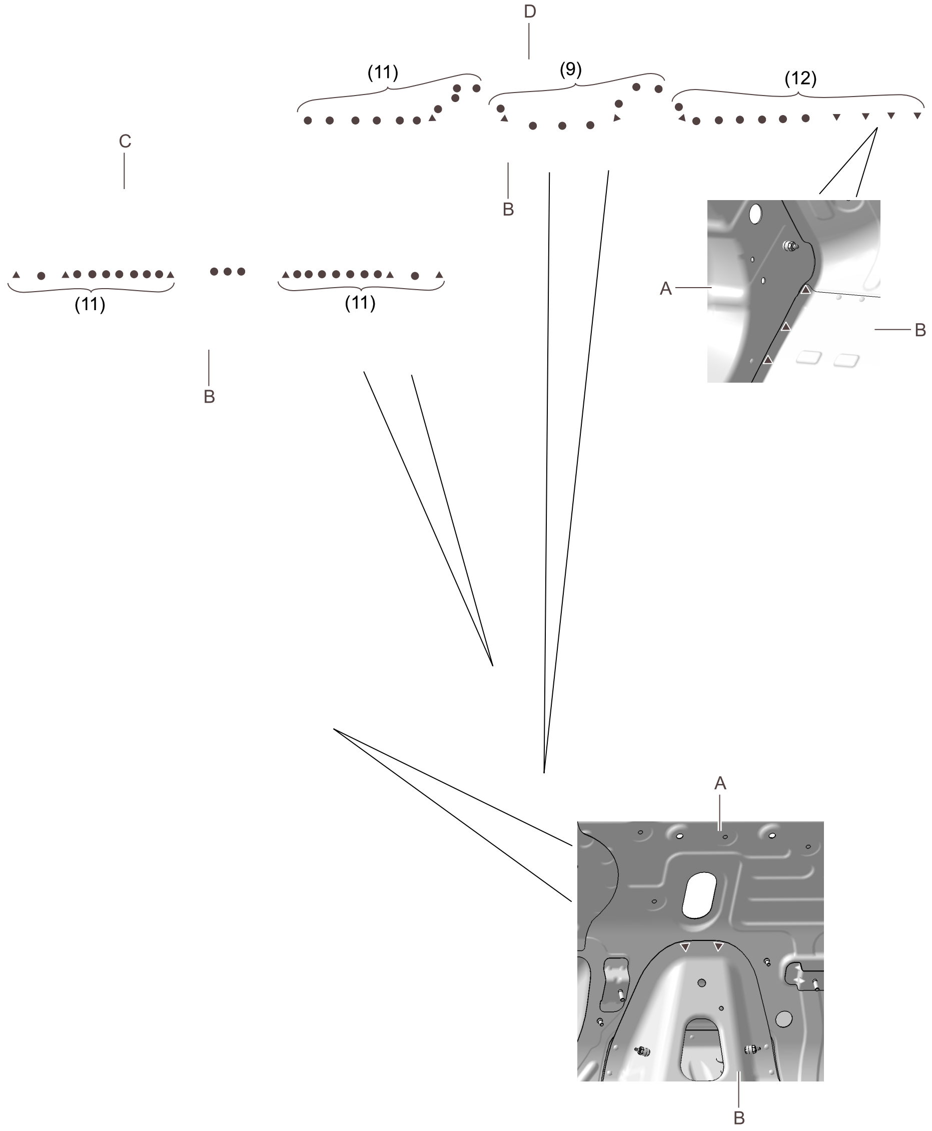
Structure

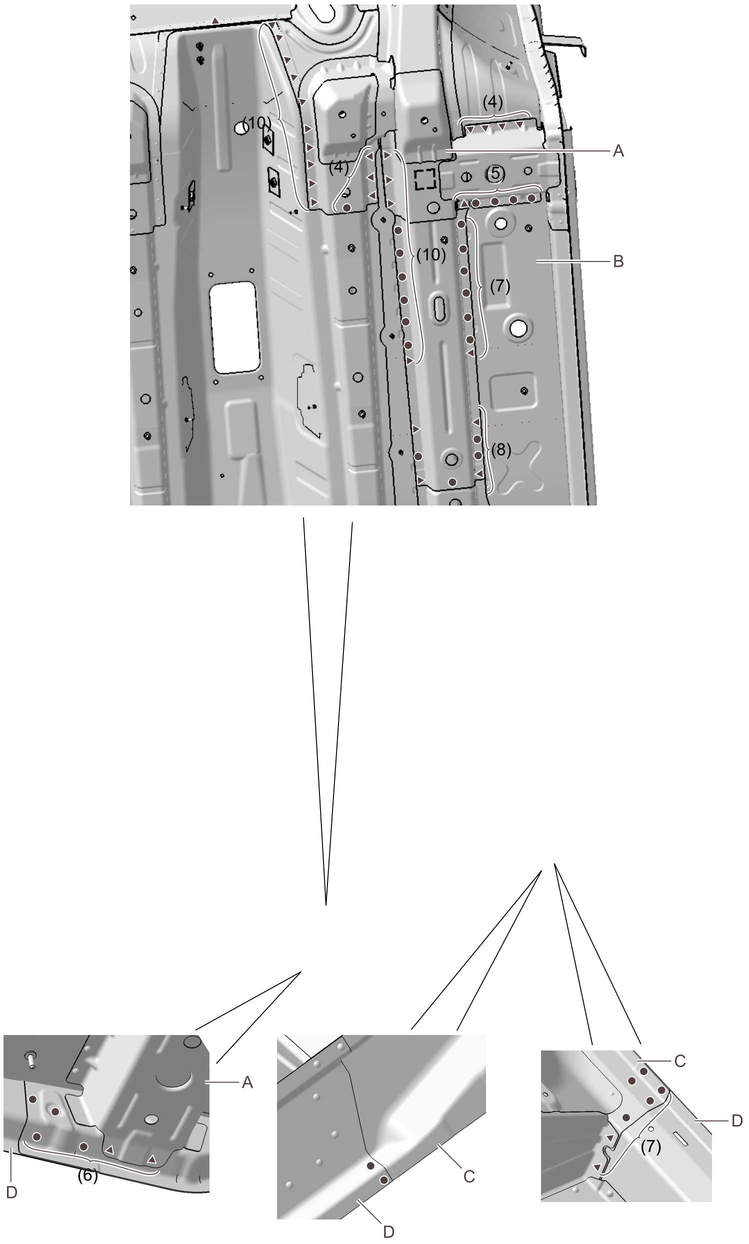


A— Front Compartment Assembly
B— Front Floor Assembly
C— Rear Floor Assembly
D— Door Sill Inner Panel Assembly

Welding

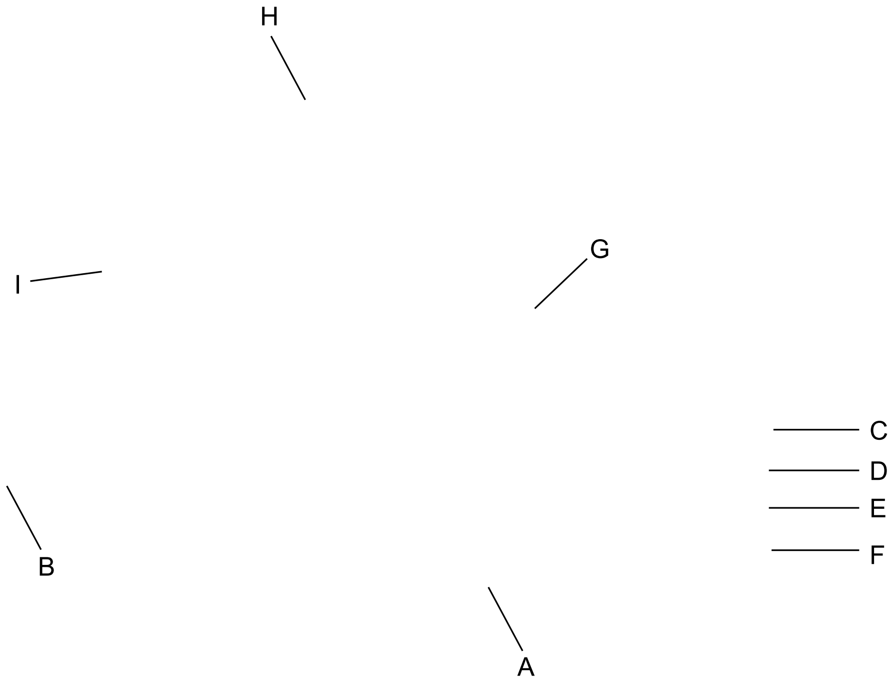
1. Weld the front compartment assembly (A), front floor assembly (B) and rear floor assembly (C) with the door sill inner panel assembly (D).


D
(11)
(9)
(12)
C
B
(11)
(11)
B
A
B
A
B


(4)
(10)
A
(4)
(5)
B
(10)
(7)
(8)
A
D
(6)
C
D
C
D
(7)

Bodyside

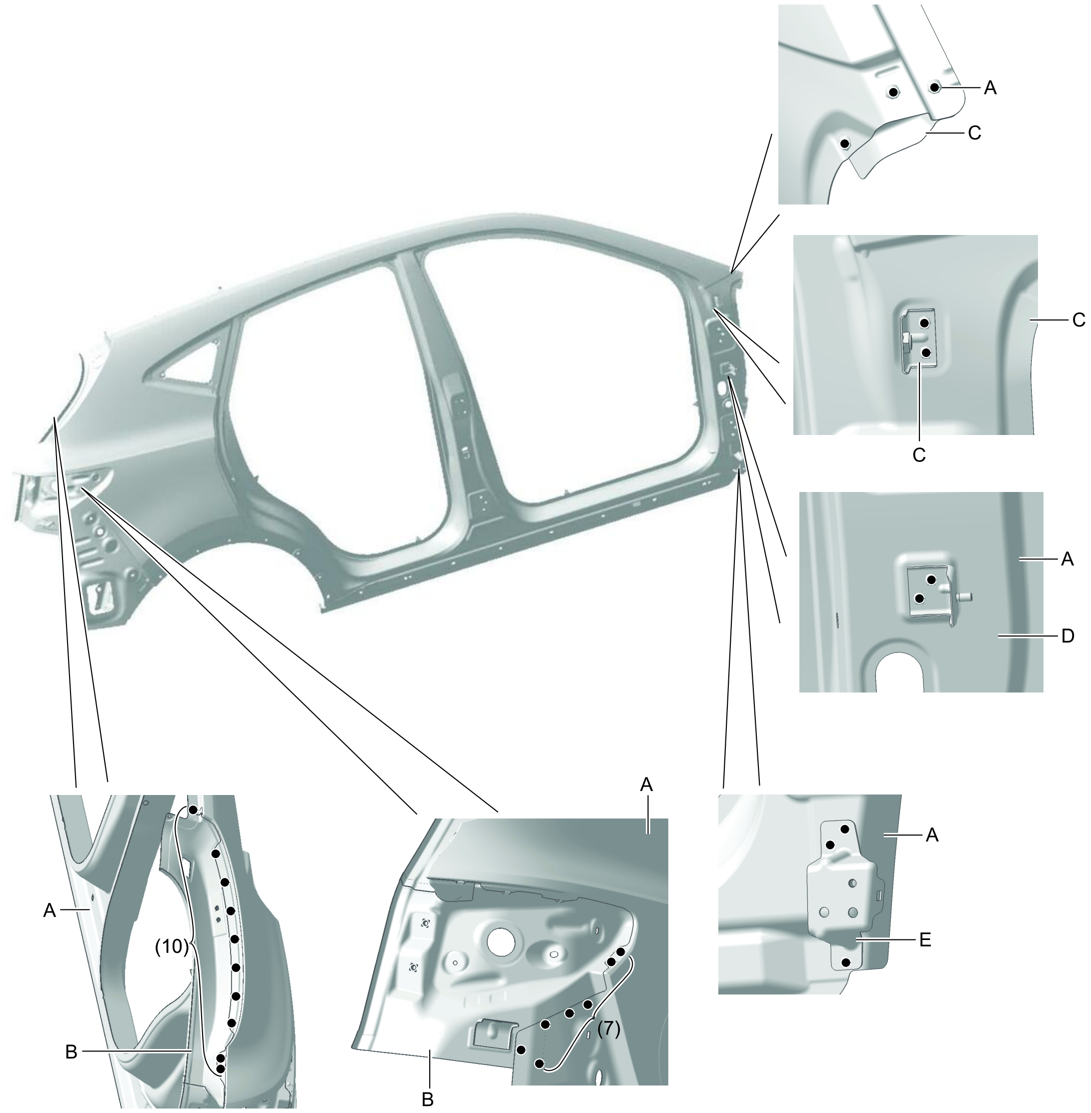
Structure



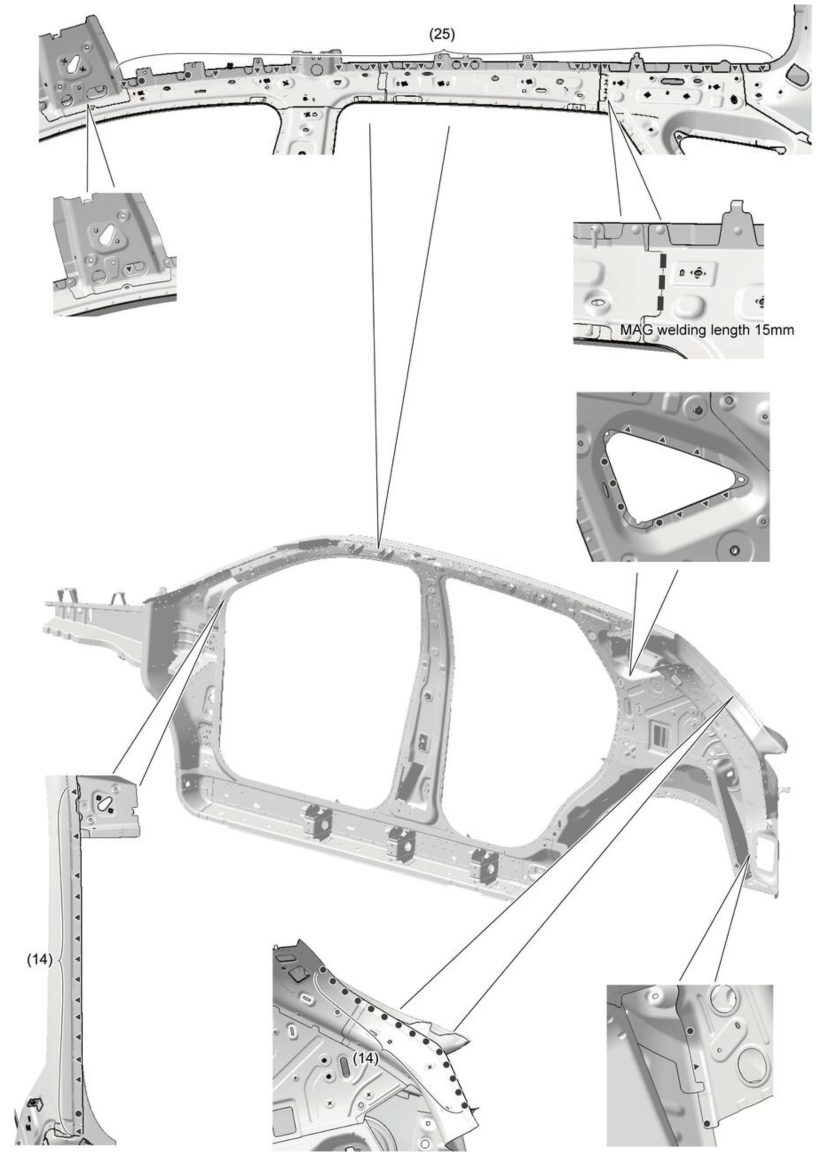
A— Bodyside Outer Panel
B— Drain Channel Extension Panel Assembly
C— A Pillar Upper Closing Panel
D— Fender Bracket
E— Fender Bracket
F— Fender Bracket
G— A Pillar Reinforcement Panel Assembly
H— B/C Pillar Closing Panel Assembly
I— Rear Bodyside Inner Panel Assembly

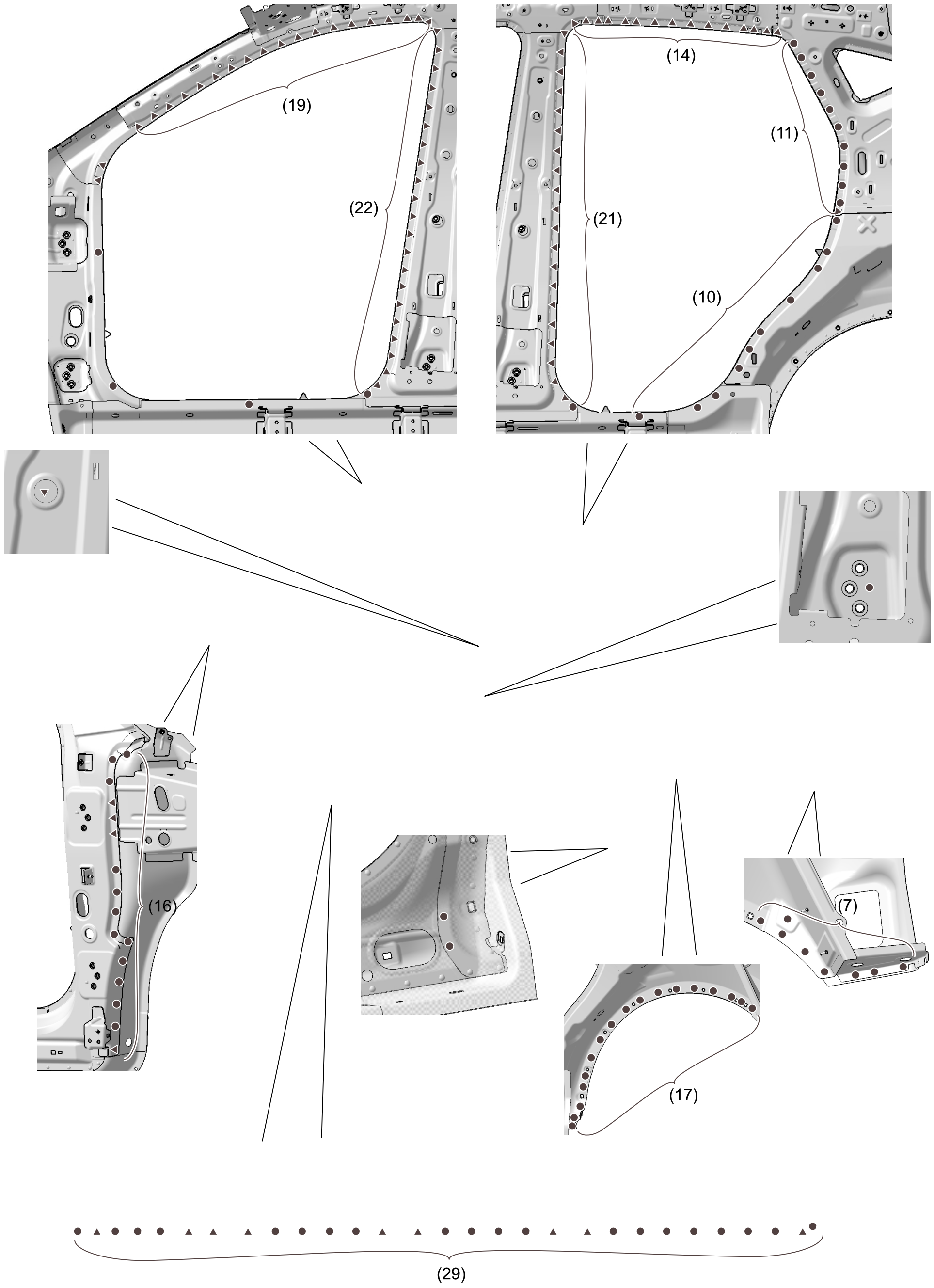
Welding

1. Weld the bodyside outer panel (A), drain channel extension panel assembly (B), A pillar upper closing panel (C), fender brackets (D, E and F) into the bodyside outer panel assembly;



2. Weld the rear bodyside inner panel assembly (H), A pillar reinforcement panel assembly (I) and B/C pillar closing panel assembly (J) with the bodyside outer panel assembly.


(25)
MAG welding length 15mm
(14)
(14)


(19)
(22)
(14)
(11)
(21)
(10)
(16)
(7)
(17)
(29)

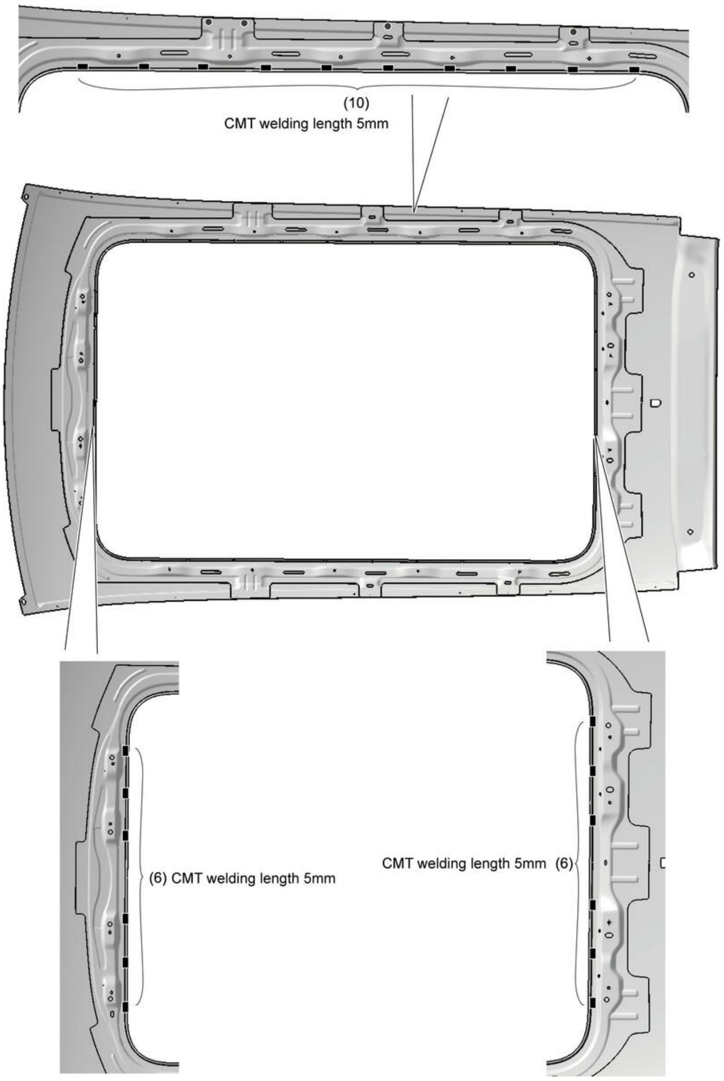
Sunroof Panel

Structure

A— Roof Panel-Sunroof
B— Sunroof Reinforcement Panel Assembly

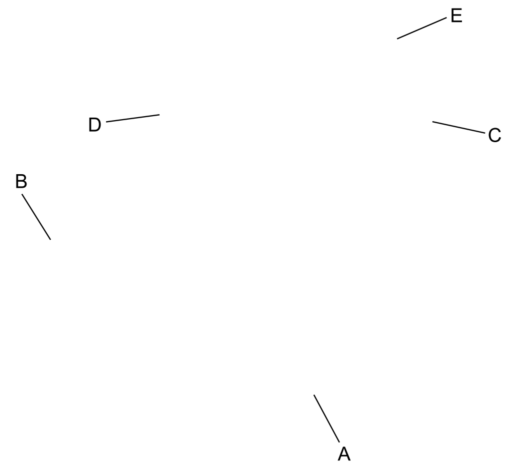
Welding

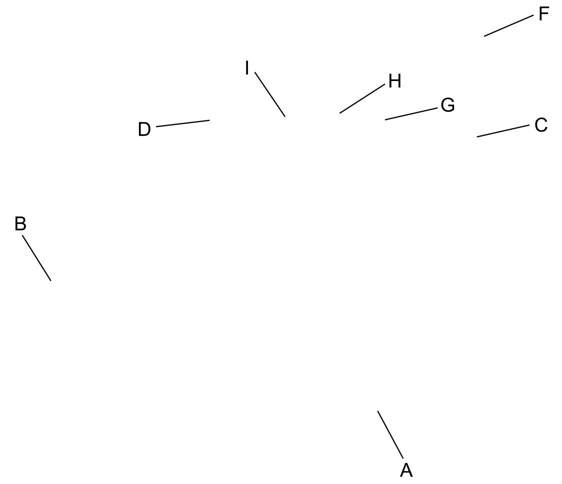
1. Weld the roof panel - sunroof (A) and the sunroof reinforcement panel assembly (B).


(10)
CMT welding length 5mm
(6) CMT welding length 5mm
CMT welding length 5mm (6)

Body In White Assembly

Structure

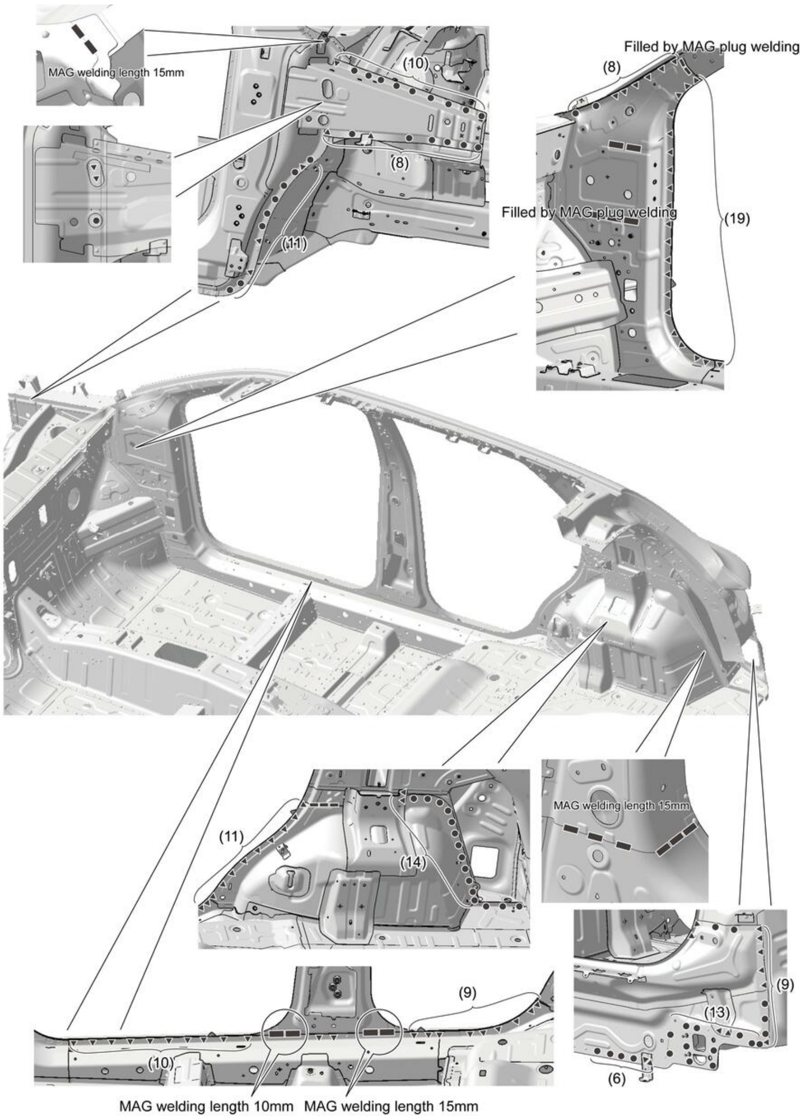




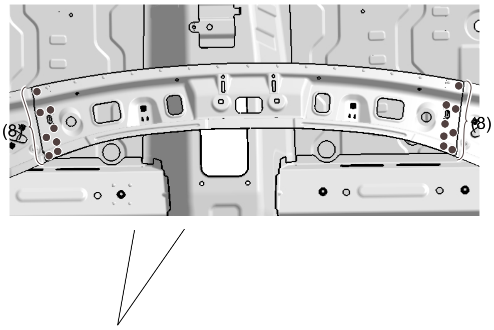
A— Bodyside Panel Assembly
B— Rear End Panel Assembly
C— Front Roof Beam Assembly
D— Rear Roof Beam Assembly
E— Sunroof Panel Assembly
F— Roof Panel-Without Sunroof
G— Middle Roof No.1 Beam
H— Middle Roof No.2 Beam
I— Middle Roof No.3 Beam

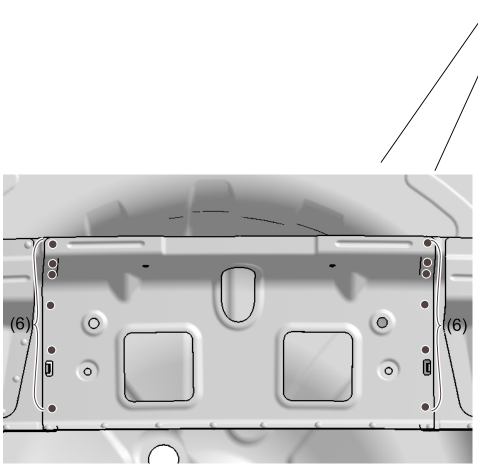
Welding

1. Weld the bodyside panel assembly (A) and rear end panel assembly (B) onto the lower body assembly;

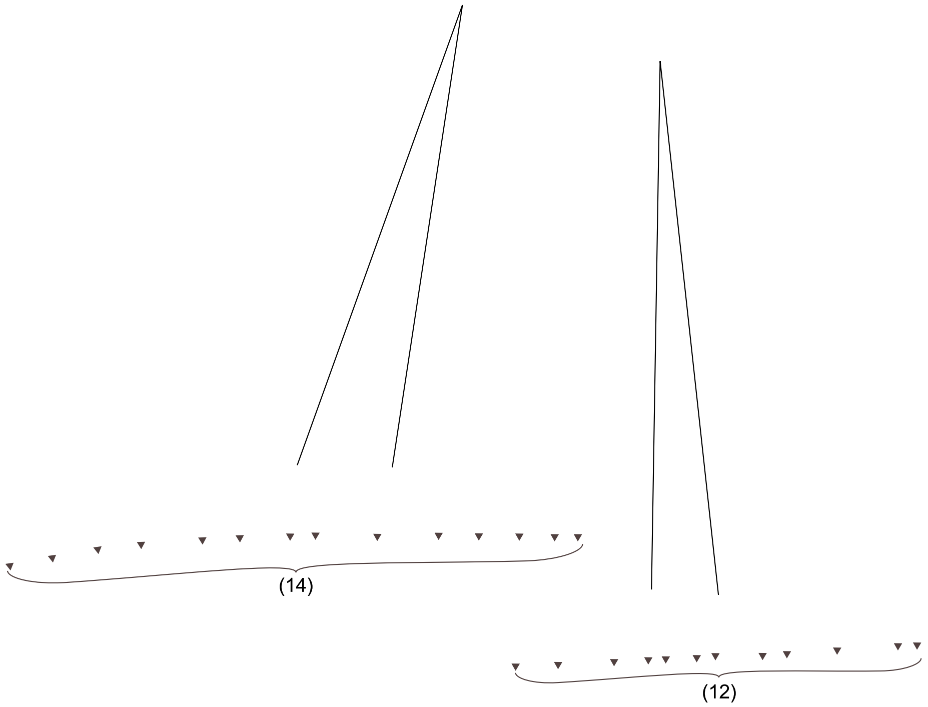

MAG welding length 15mm
(10)
(8)
(11)
Filled by MAG plug welding
(8)
Filled by MAG plug welding
(19)
(11)
(14)
MAG welding length 15mm
(9)
(13)
(6)
(9)
(10)
MAG welding length 10mm
MAG welding length 15mm

2. Then weld the front roof beam assembly (C) and the rear roof beam assembly (D);

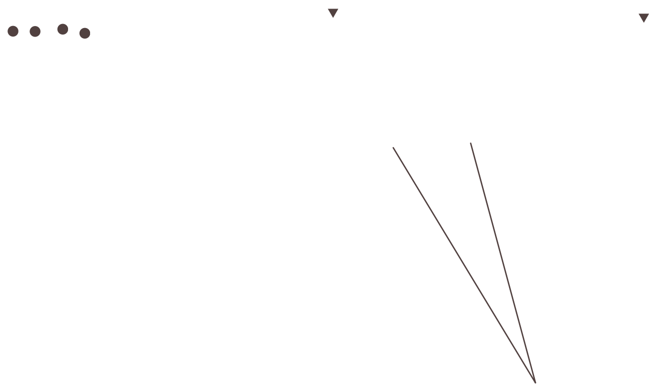


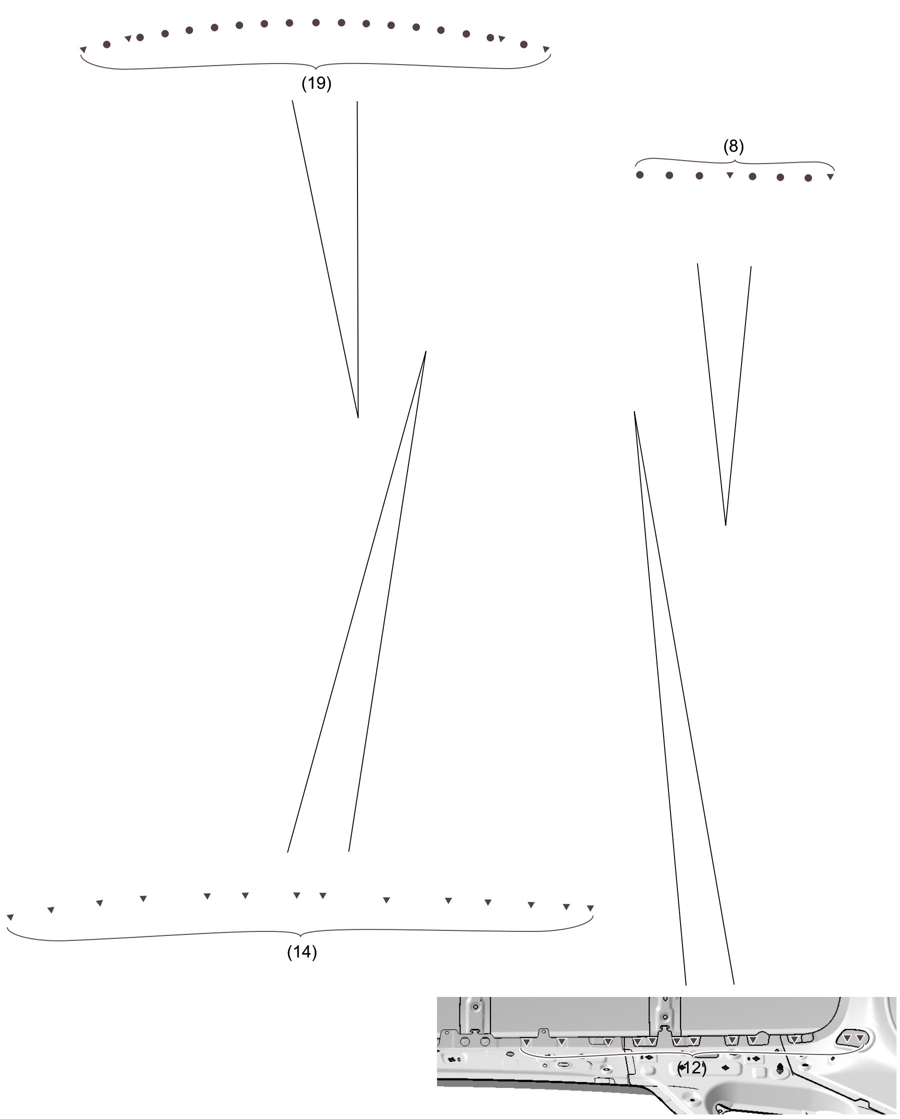


3. For body in white assembly with sunroof, weld the sunroof panel assembly (E) onto the vehicle body;



4. For body in white assembly without sunroof, weld the roof beams (G, H and I) onto the vehicle body, and then weld the roof panel - without sunroof (F).




(19)
(8)
(14)
(12)

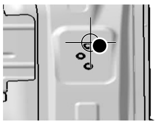
Body Dimension

Point to Point Dimensional Information

Bodyside and Roof Information

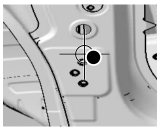
A

前门上铰链安装孔ϕ10
Front door upper hinge mounting hole



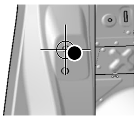
B

前门下铰链安装孔ϕ 10
Front door lower hinge mounting hole



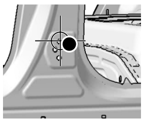
C

后门上铰链安装孔ϕ 10
rear door upper hinge mounting hole



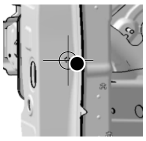
D

后门下铰链安装孔ϕ 10
Rear door lower hinge mounting hole



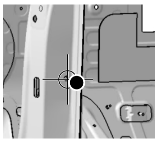
E

前门限位器安装孔 ϕ 8
Front door restrainer mounting hole



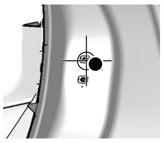
F

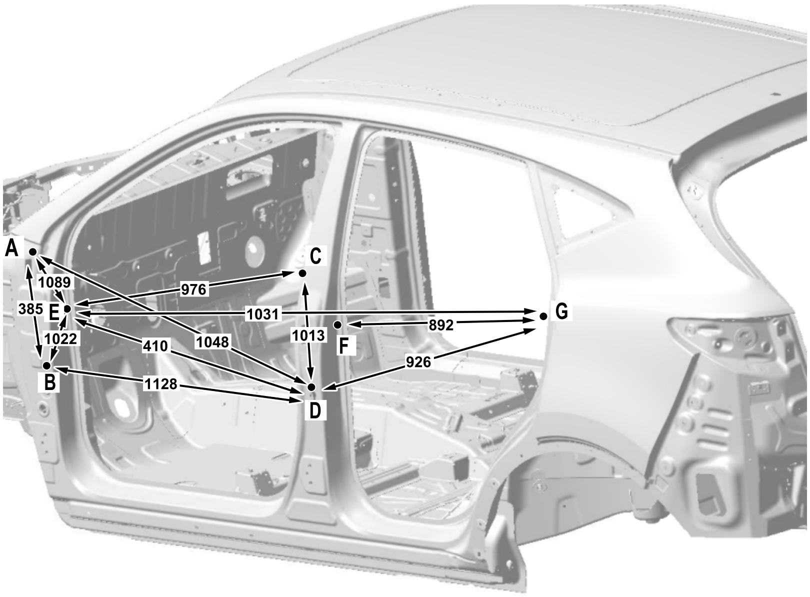
后门限位器安装孔 ϕ 8
Rear door restrainer mounting hole



G

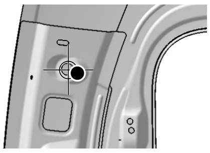
后门锁扣安装孔ϕ 7
Rear door swith mounting hole




A
C
1089
976
385
E
1031
G
1022
1013
892
410
1048
F
926
B
1128
D

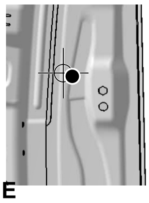
A

前横梁定位孔 ф 20
Front cross beam locating hole



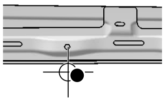
B

天窗安装孔 ф10
Sunroof mounting hole



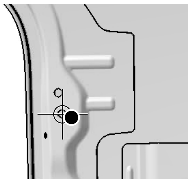
C

天窗安装孔 ф 9.5
Sunroof mounting hole



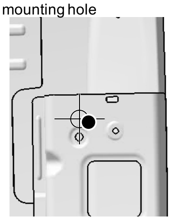
D

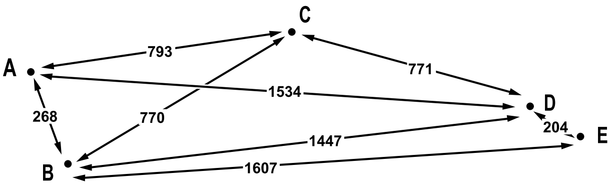
天窗安装孔 ф 10
Sunroof mounting hole



E

后横梁安装孔 ф12
Rear cross member mounting hole

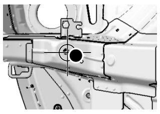



C
A
793
771
1534
D
268
770
204
1447
E
B
1607

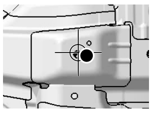
Note: All dimensions are to hole/slot centres.

Underbody Information

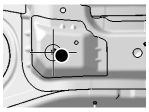
A1A2
副车架安装孔 φ 10
Subframe mounting hole



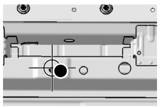
B1B2
副车架安装孔 φ 10
Subframe mounting hole



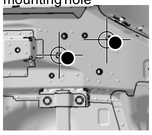
C1C2
副车架安装孔 φ 10
Subframe mounting hole



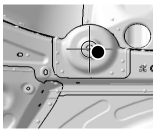
D1D2
电池安装孔 φ 10
Battery mounting hole



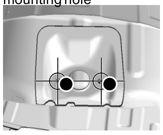
E1E2F1F2
后悬安装孔 φ 12
Rear suspensin mounting hole



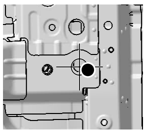
G1G2
弹簧安装孔 φ 14
Spring mounting hole

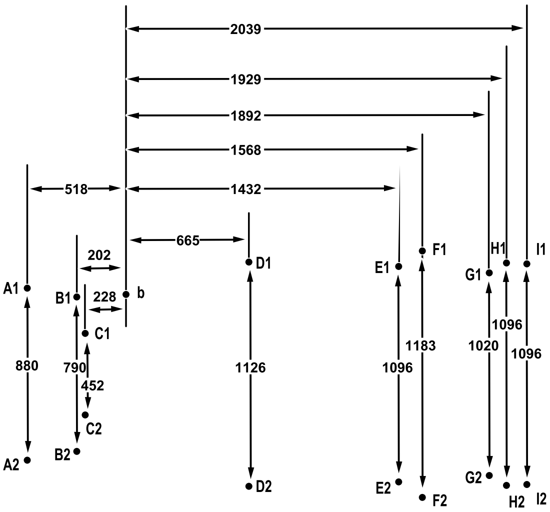


H1H2I1I2
后悬弹簧安装孔 φ 12
Rear suspension spring mounting hole



b
主基准孔 φ 25
Main reference hole

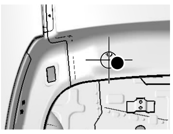



2039
1929
1892
1568
518
1432
665
202
228
b
A1
A2
880
B1
B2
790
C1
C2
452
D1
D2
1126
E1
E2
1096
F1
F2
1183
G1
G2
1020
H1
H2
1096
I1
I2
1096

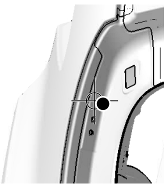
Note: All dimensions are to hole/slot centres.

Rear End Information

A1A2
尾门铰链安装孔Φ12
Tail door hinge mounting hole

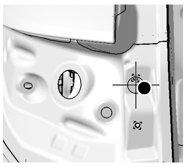


B1B2
尾门气弹簧安装孔Φ6
Tail door gas spring mounting hole

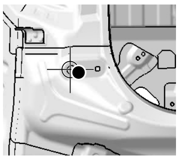


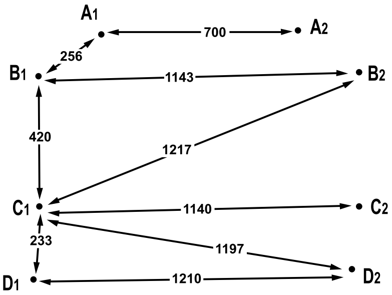
hole

C1C2
尾灯安装孔Φ6
Tail lamp mounting hole



D1D2
后围定位孔Φ 20
Rear locating hole



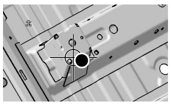

A1
700
A2
256
B1
1143
B2
420
1217
C1
1140
C2
233
1197
D1
1210
D2

Note: All dimensions are to hole/slot centres.

Interior Information

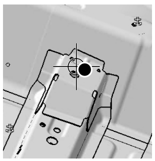
A

座椅安装孔ϕ15.5
Seat mounting hole



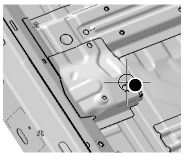
B

座椅安装孔ϕ15.5
Seat mounting hole



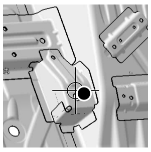
C

座椅安装孔ϕ15.5
Seat mounting hole



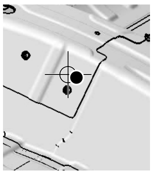
D

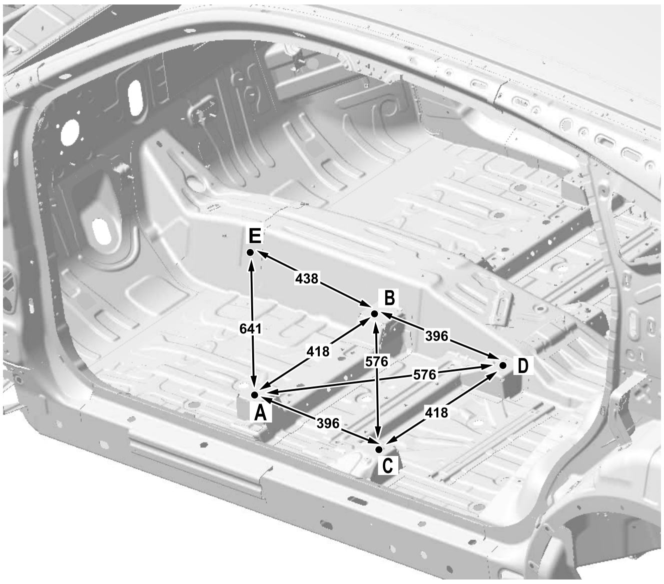
座椅安装孔ϕ15.5
Seat mounting hole



E

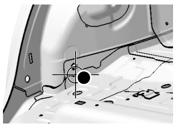
CCB支架安装孔ϕ8
Seat mounting hole




E
438
B
641
418
396
576
576
D
A
396
418
C

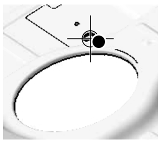
A

安全带安装孔 ϕ11
Seat belt mounting hole



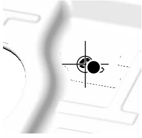
B

安全带安装孔 ϕ17
Seat belt mounting hole



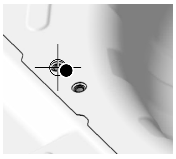
C

安全带安装孔 ϕ17
Seat belt mounting hole



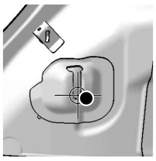
D

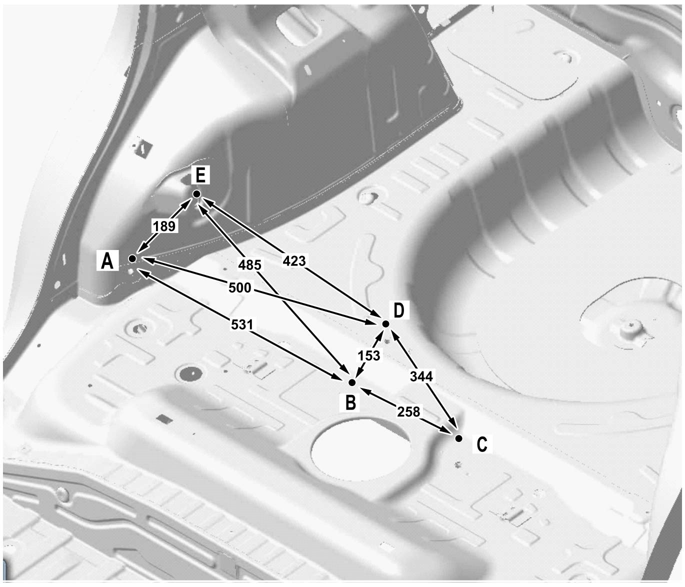
座椅支架安装孔 ϕ14
Seat bracket mounting hole



E

座椅转轴安装孔 ϕ14
Seat shaft mounting hole



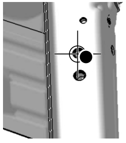

E
189
A
485
423
500
D
531
153
344
B
258
C

Note: All dimensions are to hole/slot centres.

Front End Information

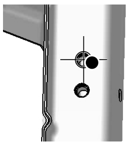
A

前围横梁安装孔ϕ12
Front cross beam
mounting hole



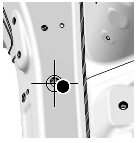
B

PDU支架安装孔ϕ12
PDU bracket mounting hole



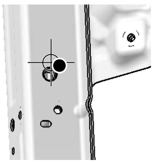
C

前围横梁安装孔ϕ12
Front cross beam
mounting hole



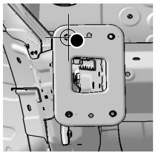
D

行李箱安装孔ϕ12
Trunk mounting hole



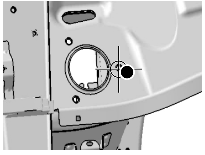
E1E2

前缓冲梁安装孔ϕ8
Front bumper beam
mounting hole



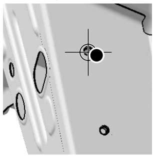
F1F2

前减震器安装孔ϕ11
Front shock absorber
mounting hole



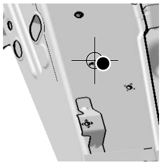
G1G2

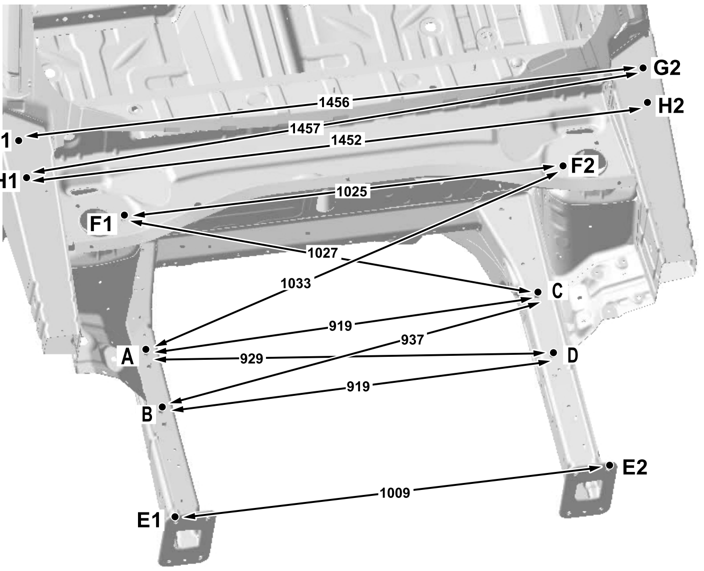
前舱罩铰链安装孔 ϕ8
Front hole hinge
mounting hole



H1H2

前舱罩铰链安装孔 ϕ8
Front hole hinge
mounting hole

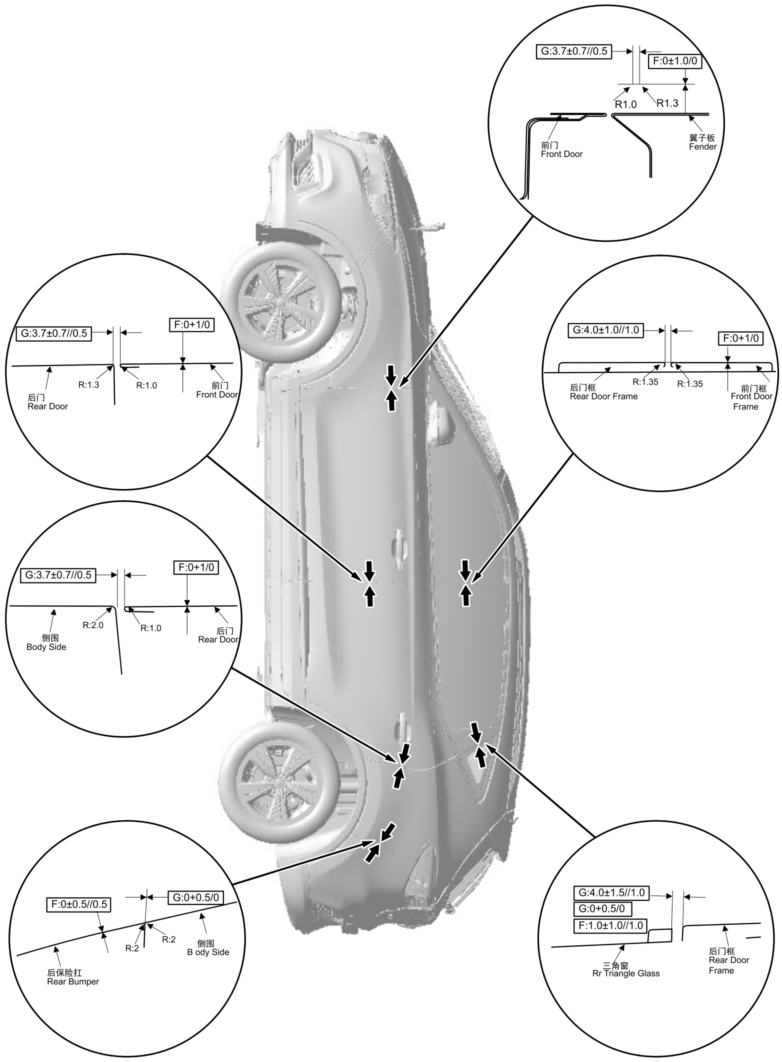



G2
H2
1456
1457
1452
G1
H1
F2
1025
F1
1027
1033
C
919
937
A
929
D
919
B
E2
1009
E1

Note: All dimensions are to hole/slot centres.

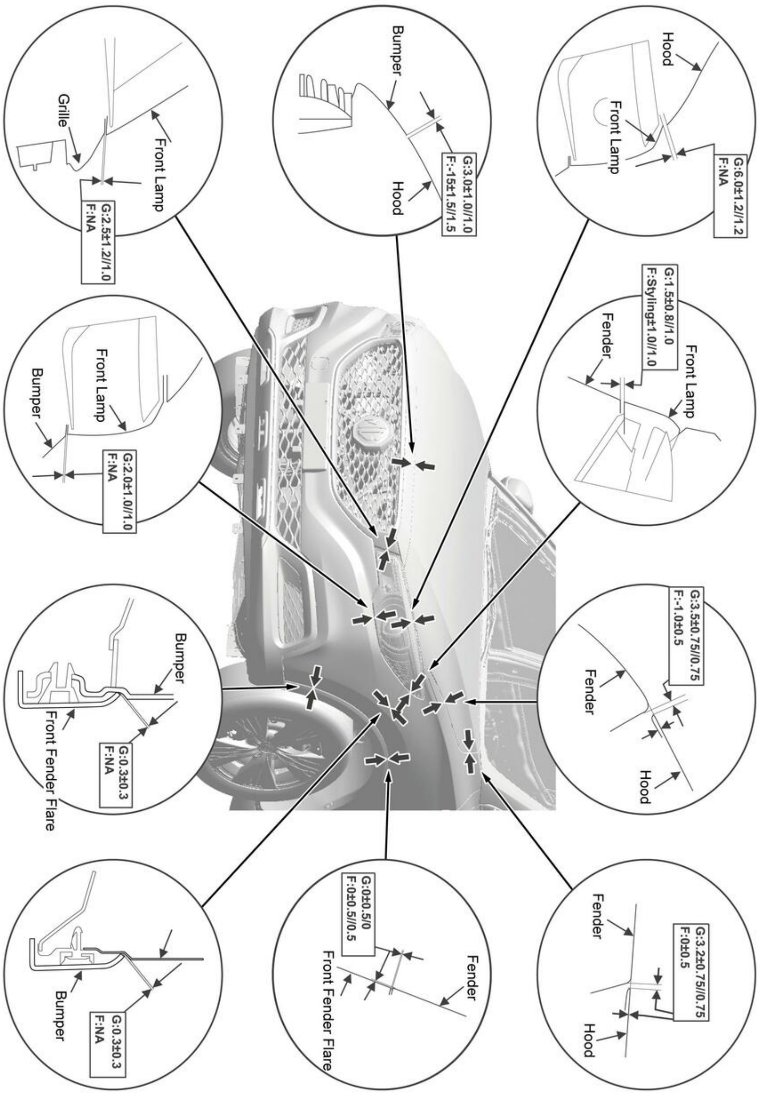
Gap Information

Body Side Information


G:3.7±0.7//0.5
F:0±1.0/0
R1.0
R1.3
前门
Front Door
翼子板
Fender
G:3.7±0.7//0.5
F:0+1/0
R:1.3
R:1.0
后门
Rear Door
前门
Front Door
G:4.0±1.0//1.0
F:0+1/0
R:1.35
R:1.35
后门框
Rear Door Frame
前门框
Front Door Frame
G:3.7±0.7//0.5
F:0+1/0
R:2.0
R:1.0
侧围
Body Side
后门
Rear Door
F:0±0.5//0.5
G:0+0.5/0
R:2
R:2
后保险杠
Rear Bumper
侧围
B ody Side
G:4.0±1.5//1.0
G:0+0.5/0
F:1.0±1.0//1.0
三角窗
Rr Triangle Glass
后门框
Rear Door Frame

Note: "//" represents parallel requirement, It means the difference between maximum clearance and minimum clearance should be within the required range.

Front End Information


Grille
Front Lamp
G:2.5±1.2//1.0
F:NA
Bumper
Hood
G:3.0±1.0//1.0
F:-15±1.5//1.5
Hood
Front Lamp
G:6.0±1.2//1.2
F:NA
Front Lamp
Bumper
G:2.0±1.0//1.0
F:NA
G:1.5±0.8//1.0
F:Styling±1.0//1.0
Fender
Front Lamp
Bumper
Front Fender Flare
G:0.3±0.3
F:NA
G:3.5±0.75//0.75
F:-1.0±0.5
Fender
Hood
Bumper
G:0.3±0.3
F:NA
G:0±0.5/0
F:0±0.5//0.5
Front Fender Flare
Fender
Fender
G:3.2±0.75//0.75
F:0±0.5
Hood

Note: "//" represents parallel requirement, It means the difference between maximum clearance and minimum clearance should be within the required range.

Rear End Information

Note: "//" represents parallel requirement, It means the difference between maximum clearance and minimum clearance should be within the required range.

Sunroof Information

***Note:** “//” represents parallel requirement, It means the difference between maximum clearance and minimum clearance should be within the required range.*

Gateway

Specifications

Torque

Description	Value
Bolt-getaway to fasic bracket	6–8Nm

Service Procedures

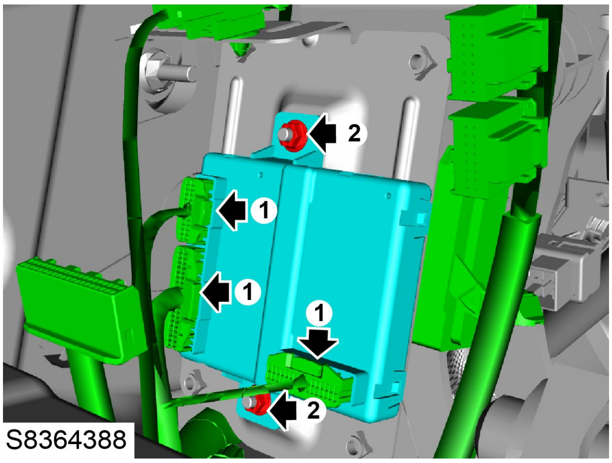
Gateway

Remove

1. Disconnect the negative battery cable.
2. Remove driver side lower trim panel.

☞**Driver Side Lower Trim Panel Remove**

3. Disconnect the gateway module connector (1).
4. Remove 2 nuts (2) fixing the gateway module to the bracket.



5. Remove the gateway module assembly.

Refit

1. Connect the gateway module connector.
2. Connect the negative battery cable.
3. Programme and encode the gateway module. Refer to Module Self-learning and Programming Manual, “Gateway Module Replacement”.
4. Fix the gateway module to the instrument panel beam, fit 2 nuts, tighten them to **6–8Nm**, and check the torque.
5. Fix driver side lower trim panel.

☞**Driver Side Lower Trim Panel Fix**

Seat Belts

Specifications

Torque

Description	Value
Bolt-front seat belt retractor to ‘BC’ post	35–45Nm
Bolt-front seat belt to body	35–45Nm
Bolt-rear seat belt‘D’loop to body	35–45Nm
Bolt-front seat belt buckle	43–53Nm
Bolt-rear seat belt retractor to body	35–45Nm
Bolt-rear seat belt buckle to rear seat	35-45Nm
Bolt-rear seat belt double buckle	35–45Nm
Bolt-rear middle seat belt to seat	35–45Nm
Bolt-rear seat belt to body	35–45Nm

Service Procedures

Front Seat Belt Assembly

Remove

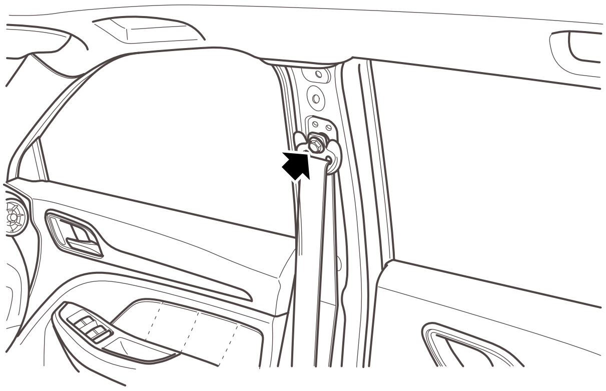
1. Remove the key from the ignition switch, and disconnect the battery positive and negative (disconnect the ground wire first). Wait for 10min until the **SRS** backup circuit is discharged.
2. Remove the Bpillar upper trim panel.

☞**BC Pillar Upper Trim Panel Remove**

3. Remove the B pillar lower trim panel.

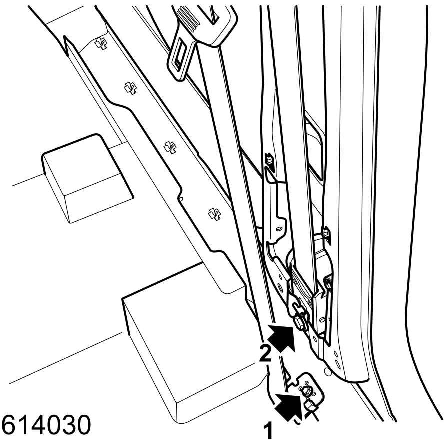
☞**B/C Pillar Lower Trim Panel Remove**

4. Remove 1 bolt fixing the D-ring of the front seat belt to the body.



S4614031

5. Remove the end cover of the seat belt, and remove 1 bolt (1) fixing the front seat belt to the underbody.
6. Disconnect the connector of the seat belt pretensioner.
7. Remove 1 bolt fixing the front seat belt retractor to the body.



S4614030

8. Remove the front seat belt assembly.

Refit

1. Fix the front seat belt retractor to the body, fit 1 bolt, tighten it to **35–45Nm**, and check the torque.
2. Connect the electrical connector of the pre-tensioner.
3. Fix the fixed end of the front seat belt to the underbody, fit 1 bolt, tighten it to **35–45Nm**, and check the torque.
4. Fix the D-ring of the front seat belt to the body, fit 1 bolt, tighten it to **35–45Nm**, and check the torque.
5. Fit the door sill trim panel.

☞**Door Sill Trim Panel Assembly Refit**

6. Fit the B/C pillar lower trim panel.

☞**B/C Pillar Lower Trim Panel Refit**

7. Connect the battery negative. Perform a system check, turn the ignition switch, check whether the **SRS** warning lamp is illuminated for several seconds, and then goes out.

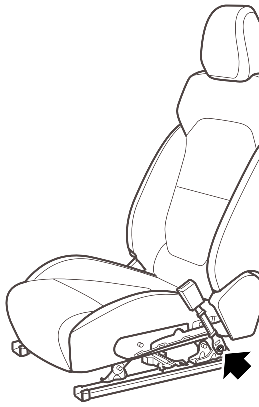
Front Seat Belt Buckle

Remove

1. Remove the front seat assembly.

☞**Front Seat Assembly Remove**

2. Remove 1 bolt securing the front seat belt buckle onto the seat.



S4213812

3. Disconnect the front seat belt buckle harness clip.
4. Remove the front seat belt buckle.

Refit

1. Fix the front seat belt buckle onto the seat, fit 1 bolt and tighten to **43–53Nm**, then check the torque.
2. Connect the front seat belt buckle harness clip.
3. fit the front seat assembly.

☞**Front Seat Assembly Refit**

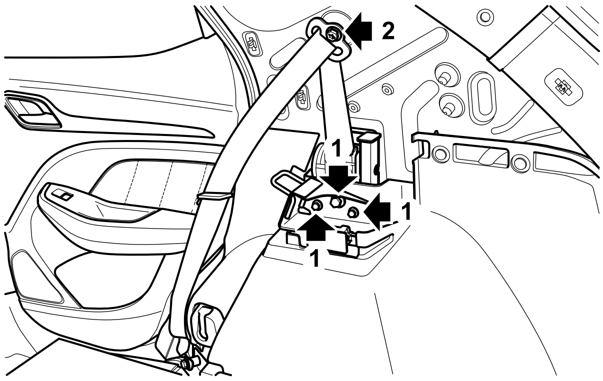
Rear Seat Belt Assembly

Remove

1. Remove the key from the ignition switch, and disconnect the battery positive and negative (disconnect the ground wire first). Wait for 10min until the **SRS** backup circuit is discharged, then start to operate.
2. Remove the rear seat cushion.

☞**Rear Seat Cushion Assembly Remove**

3. Remove the three bolts (1) that fasten the D-ring of the side seat belt of the rear seat to the body of the car.
4. Remove a bolt (2) that secures the side seat belt coiler of the rear seat to the body of the car, and take out the retractor



S4614032

5. Remove the rear seat belt assembly.

Refit

1. Fix the rear seat side belt retractor onto the body, fit 3 bolt and tighten to **35–45Nm** then check the torque.
2. Fix the rear seat side belt D ring onto the body, fit 1 bolt and tighten to **35–45Nm**, then check the torque.
3. Fit the C pillar upper trim panel.

☞**BC Pillar Upper Trim Panel Refit**

4. Fit the rear seat cushion.

☞**Rear Seat Cushion Assembly Refit**

5. Connect the negative battery. Check the system, rotate the ignition switch, and check whether the **SRS** warning lamp illuminates for several seconds, and then goes out.

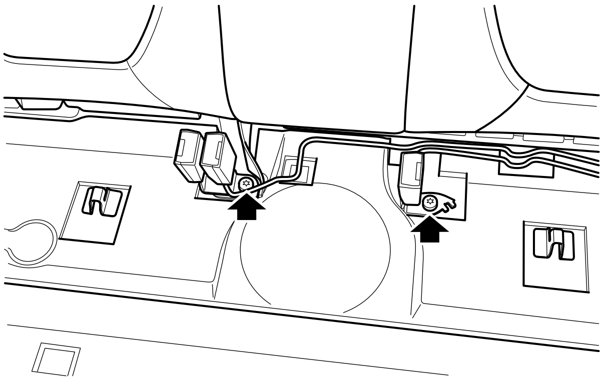
Rear Seat Belt Buckle

Remove

1. Remove the rear seat cushion assembly.

☞**Rear Seat Cushion Assembly Remove**

2. Remove 1 bolt securing the rear seat belt single buckle to the rear floor (1) and 1 bolt securing the rear seat belt double buckle to the rear floor (2), then remove the rear seat belt buckle.



S4614033

Refit

1. Fix the rear seat belt single buckle onto the floor, fit 1 bolt, tighten it to **35-45Nm**, and check the torque.
2. Fix the rear seat belt double buckle onto the rear floor, fit 1 bolt, tighten it to **35–45Nm**, and check the torque.
3. Fit the rear seat cushion assembly.

☞**Rear Seat Cushion Assembly Refit**

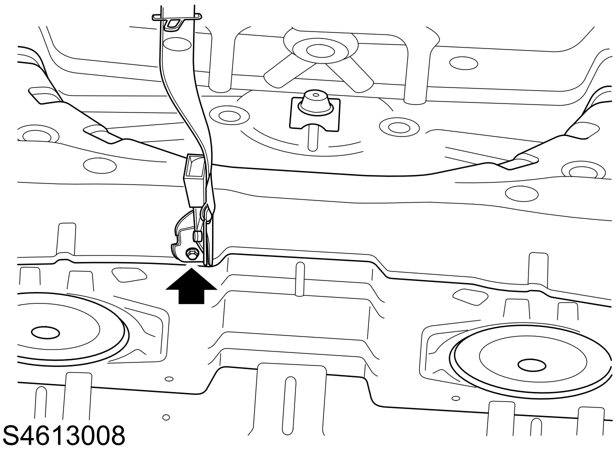
Rear Seat Middle Belt

Remove

1. Remove the rear seat cushion assembly.

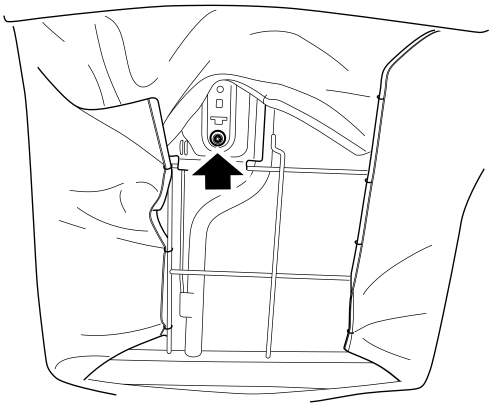
☞**Rear Seat Cushion Remove**

2. Remove 1 bolt fixing the rear seat middle seat belt onto the floor.



S4613008

3. Lift the rear seat back cover, and remove 1 bolt fixing the rear seat middle retractor onto the rear seat back frame.



S4213308

4. Move the rear seat back foam, and take out the rear seat middle retractor.
5. Pass the middle seat belt webbing through the rear middle seat belt decorative frame and remove the rear seat middle belt assembly.

Refit

1. Pass the rear middle seat belt webbing through the rear middle seat belt decorative frame.
2. Fix the rear middle seat belt onto the rear seat back frame, fit 1 bolt, tighten to **35–45Nm**, and check the torque.
3. Reset the rear seat back foam.
4. Reset the rear seat back cover assembly, and secure with hooks.
5. Fix the rear middle seat belt onto the floor, fit 1 bolt,

tighten it to**35–45Nm**, and check the torque.

6. Fit the rear seat cushion.

☞**Rear Seat Cushion Refit**

Supplementary Restraint Systems

Specifications

Torque

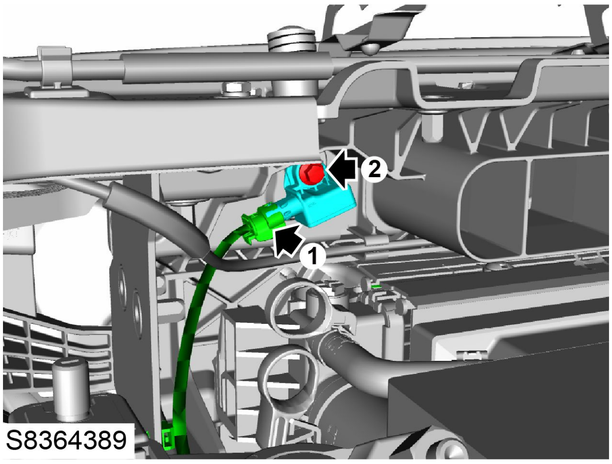
Description	Value
Bolt-Front impact sensor to Body	7-10Nm
Bolt-Side impact sensor to Body	7-10Nm
Screw- side curtain	7–9Nm
Bolt-SDM to Body	7-10Nm

Service Procedures

Airbag Front Impact Sensor

Remove

1. Disconnect the negative battery cable.
2. Remove 1 bolt (2) fixing the front impact sensor to the body.
3. Disconnect the harness connector (1) and remove the front impact sensor.



Refit

1. Connect the harness connector.
2. Fix the front impact sensor to the body, fit 1 bolt, tighten it to **7-10Nm**, and check the torque.
3. Connect the negative battery cable.

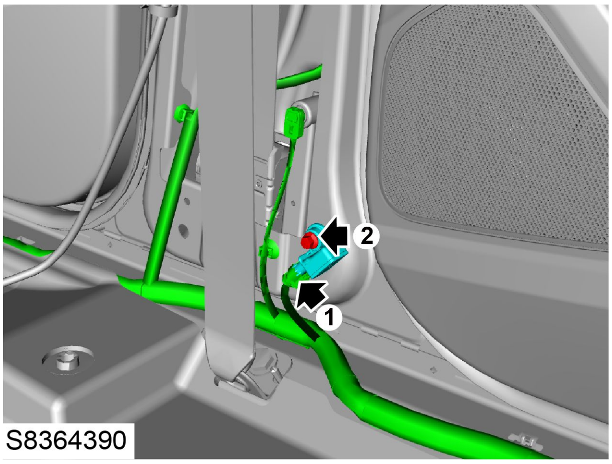
Airbag Side Impact Sensor

Remove

1. Disconnect the negative battery cable.
2. Remove the door sill trim panel assembly.

☞**Door Sill Trim Panel Assembly Remove**

3. Disconnect the harness connector (1).
4. Lift the carpet, and remove 1 bolt (2) fixing the side impact sensor to the body.



5. Remove the airbag side impact sensor.

Refit

1. Connect the harness connector.
2. Fix the side impact sensor to the body, fit 1 bolt, tighten it to **7-10Nm**, and check the torque.
3. Fit the door sill trim panel assembly.

☞**Door Sill Trim Panel Assembly Refit**

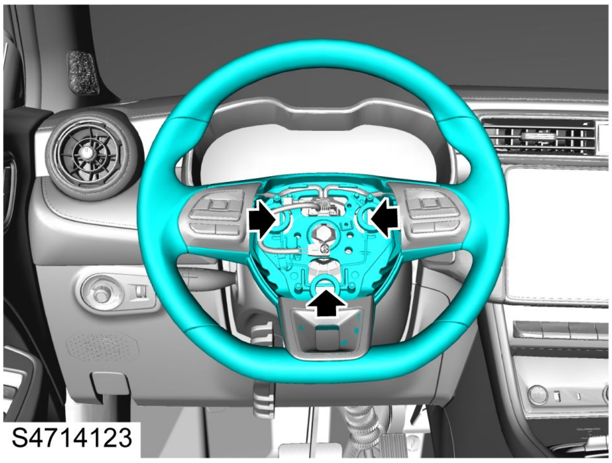
4. Connect the negative battery cable.

Steering Wheel Airbag

Remove

Warning: It is imperative that before any work is undertaken on the SRS system the appropriate information is read thoroughly.

1. Disconnect the negative battery cable. Wait for 10 minutes until the **SRS** backup circuit is discharged.
2. Adjust the steering wheel to the lowest position.
3. Adjust the depth of the steering wheel and pull it outwards to the end.
4. Pry off and remove the upper trim cover of the steering column to spare room for removing the airbag lock ring.
5. Rotate the steering wheel to expose the airbag lock ring.
6. Carefully pry off 3 lock rings from the lower part of the steering wheel with a flat-bladed screwdriver to release 3 PINs fixing the airbag to the steering wheel.



S4714123

7. Disconnect the airbag connector, and remove the steering wheel airbag.

Refit

1. Connect the driver airbag connector.
2. Place the driver airbag in the steering wheel mounting position, with the three protruding PINs of the airbag aligned with the three concave holes in the steering wheel.
3. Push the driver airbag into the steering wheel until a click can be heard.
4. Fix the steering column upper trim cover to the lower trim cover, and press the clip in place.
5. Restore the steering wheel.
6. Connect the negative battery cable. Perform a system check, press the start switch, check if the **SRS** warning lamp illuminates for several seconds, and then goes out.

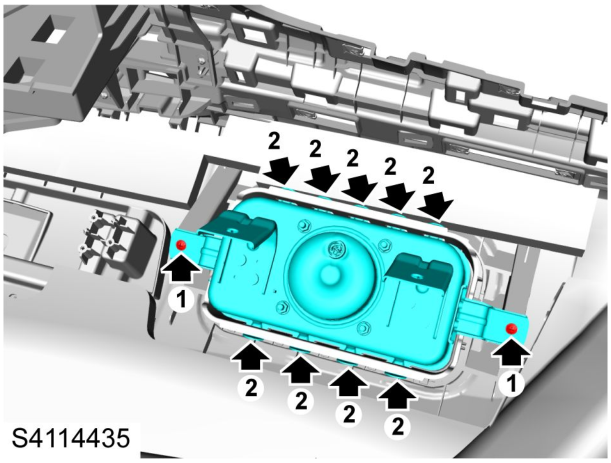
Instrument Panel Airbag

Remove

1. Disconnect the negative battery cable. Wait for 10 minutes until the **SRS** backup circuit is discharged.
2. Remove the instrument panel body assembly.

☞**Instrument Panel Beam Assembly Remove**

3. Remove 2 screws (1) fixing the passenger's front airbag module to the instrument panel body.
4. Remove 9 claws (2) fixing the passenger's front airbag module to the instrument panel, and remove the passenger's front airbag module.



S4114435

Refit

1. Fit 9 claws fixing the passenger's front airbag module to the instrument panel.
2. Fit 2 screws fixing the passenger's front airbag module to the instrument panel.
3. Fit the instrument panel body assembly.

☞**Instrument Panel Beam Assembly Refit**

4. Connect the negative battery cable. Perform a system check, press the start switch, check if the **SRS** warning lamp illuminates for several seconds, and then goes out.

Side Curtain Airbag

Remove

Warning: It is imperative that before any work is undertaken on the SRS system the appropriate information is read thoroughly.

1. Disconnect the battery. Wait for 10min until the **SRS** backup circuit is discharged, then start to operate.
2. Remove the A pillar upper trim panel.

☞**A Pillar Upper Trim Panel Remove**

3. Remove the B pillar upper trim panel.

☞**B/C Pillar Upper Trim Panel Remove**

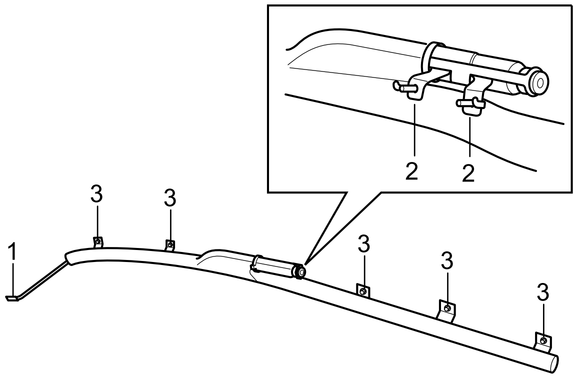
4. Remove the C pillar upper trim panel.

☞**C Pillar Upper Trim Panel Remove**

5. Remove the roof handle bracket.

☞**Roof Interior Handle Remove**

6. Pry the roof trim panel on one side.
7. Release the hook to disconnect the curtain airbag connector.
8. Remove the clip (1) securing the curtain airbag front tether.
9. Remove 2 bolts securing the curtain airbag gas generator bracket (2).
10. Remove 5 bolts (3) securing the curtain airbag.



S4713301

11. Remove the side curtain airbag.
12. Repeat the above steps to remove the right curtain airbag.

Refit

1. Fix the curtain airbag to the roof, fit the clip, fit 5 bolts, tighten to **7–9Nm** and check the torque.
2. Fit 2 bolts securing the curtain airbag gas generator bracket, tighten to **7–9Nm** and check the torque.
3. Fix the curtain airbag front tether to the A pillar, fit the hook and tap the clip.
4. Connect the side curtain harness connector, tap down the roof trim panel.
5. Fit the roof handle bracket.

☞**Roof Interior Handle Refit**

6. Fit the A pillar upper trim panel.

☞**A Pillar Upper Trim Panel Refit**

7. Fit the B pillar upper trim panel.

☞**B/C Pillar Lower Trim Panel Refit**

8. Fit the C pillar upper trim panel.

☞**BC Pillar Upper Trim Panel Refit**

9. Repeat the step below to fit the curtain airbag on the other side.
10. Connect the battery negative. Perform a system check, turn the ignition switch, check whether the **SRS** warning lamp is illuminated for several seconds, and then goes out.

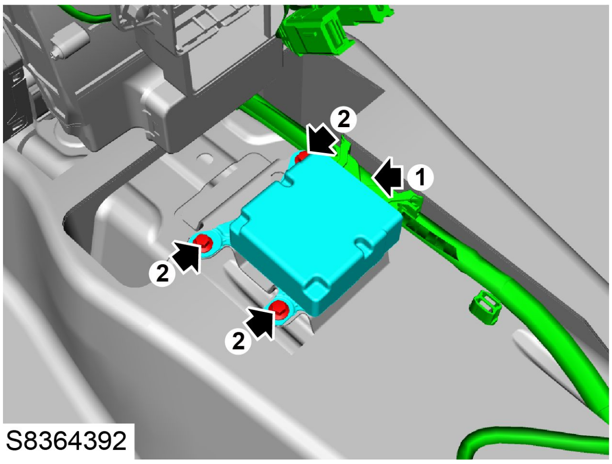
Airbag Control Module

Remove

1. Disconnect the negative battery cable, wait for 10 minutes until the **SRSECU** internal circuit is discharged.
2. Remove the centre console assembly.

☞**Centre Console Assembly Remove**

3. Disconnect the harness connector (1).
4. Remove 3 bolts (2) fixing the airbag control module to the body.



S8364392

5. Remove the airbag control module.

Refit

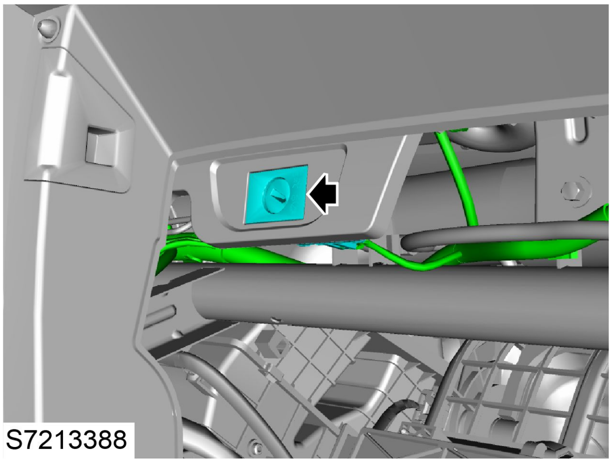
1. Fix the airbag control module to the body, fit 3 bolts, tighten them to **7-10Nm**, and check the torque.
2. Connect the harness connector.
3. Connect the negative battery cable.
4. Programme and encode the airbag control module (**SDM**). Refer to Module Self-learning and Programming Manual, "**SDM** Replacement".
5. Fit the centre console assembly.

☞**Centre Console Assembly Refit**

Front Passenger Airbag Disable Switch

Remove

1. Disconnect the negative battery cable.
2. Open the glove box.
3. Disconnect the harness connector, loosen the clip, and remove the front passenger airbag disable switch.



S7213388

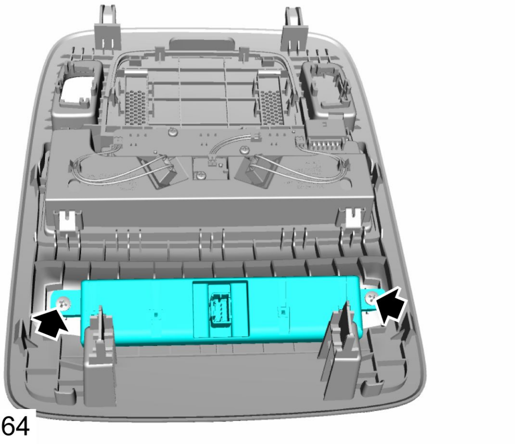
Refit

1. Connect the harness connector.
2. Fix the front passenger airbag disable switch to the glove box frame, and snap it into place.
3. Close the glove box.
4. Connect the negative battery cable.

Auxiliary Display Module

Remove

1. Disconnect the negative battery cable.
2. Pry off the clip and remove the roof console.
3. Disconnect the harness connector.
4. Remove 11 screws (if any) fixing the roof console upper cover to the roof console, and remove the roof console upper cover.
5. Remove 2 screws fixing the auxiliary display module to the roof console.



S8113364

6. Remove the auxiliary display module.

Refit

1. Fix the auxiliary display module to the roof console, fit 2 screws and tighten them.
2. Fix the roof console upper cover to the roof console, fit 11 screws (if any) and tighten them.
3. Connect the harness connector.
4. Fit the roof console.
5. Connect the negative battery cable.

Park Assistant System

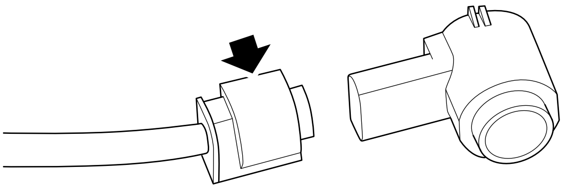
Service Procedures

Rear Ultrasonic Sensor

Remove

Warning: Rear PDC Sensor must be disassembled after the exhaust has cooled.

1. Disconnect the battery negative cable.
2. Lift the vehicle.
3. Remove the ultrasonic sensor from the rear bumper.
4. Disconnect the ultrasonic sensor connector, and remove it.



S8113003

Refit

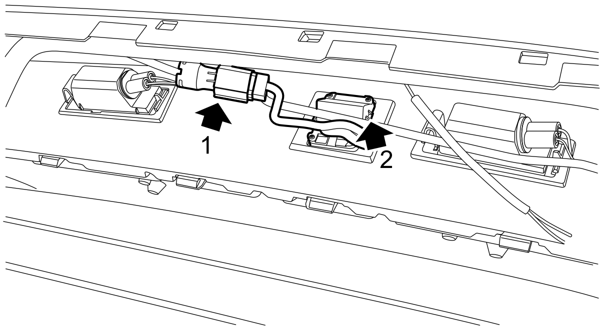
1. Connect the ultrasonic sensor connector.
2. Clamp the ultrasonic sensors into the rear bumper.
3. Lower the vehicle.
4. Connect the battery negative cable.

Rear Camera

Remove

Warning: Rear View Camera must be disassembled after the exhaust has cooled.

1. Disconnect the battery negative cable.
2. Lift the vehicle.
3. Disconnect the connector (1).
4. Press the rear camera clip (2), push it outwards to remove the rear camera.



S7313152

Refit

1. Fit the camera to the rear bumper.
2. Connect the harness connector.
3. Lower the vehicle.
4. Connect the battery negative cable.

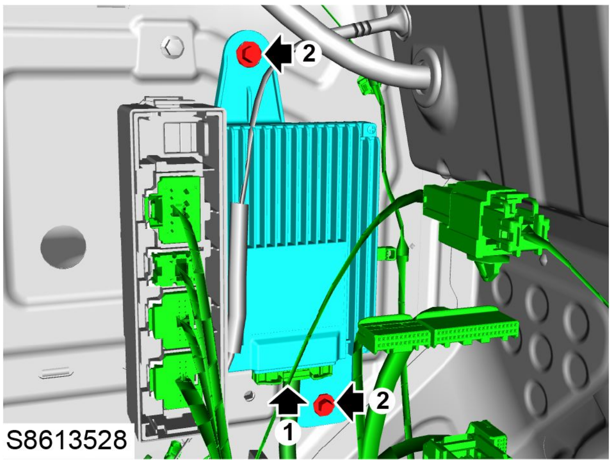
Around View Monitor (AVM)

Remove

1. Disconnect the negative battery cable.
2. Remove the driver side lower closure panel.

☞**Front Seat Assembly Remove**

3. Remove 2 bolts (2) fixing the AVM to the PEPS bracket.
4. Disconnect the harness connector (1) and remove the AVM.



Refit

1. Connect the harness connector.
2. Connect the negative battery cable.
3. Programme and encode the around view monitor (AVM). Refer to Module Self-learning and Programming Manual, “Around View Monitor (AVM)” and “360 Panoramic View Camera Calibration”.
4. Fix the AVM to the PEPS bracket, fit 2 bolts, tighten them to **5–7Nm**, and check the torque.
5. Fit the driver side lower closure panel.

☞**Front Seat Assembly Refit**

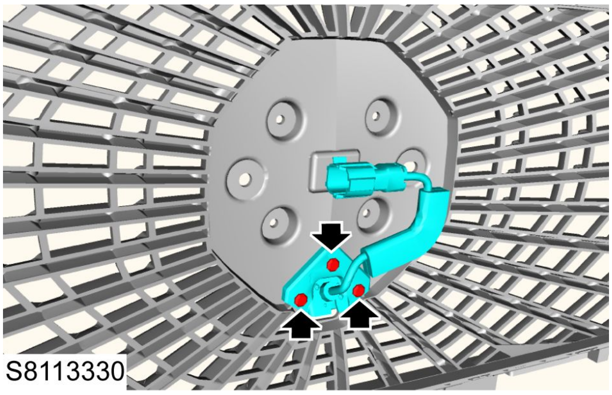
360 Panoramic Front View Camera

Remove

1. Disconnect the negative battery cable.
2. Remove the front bumper assembly.

☞**Front Bumper Remove**

3. Remove 3 screws fixing the front camera trim panel to the front bumper.



4. Remove the 360° panoramic front view camera.

Refit

1. Connect the harness connector of the camera.
2. Connect the negative battery cable.
3. Programme and encode the 360° panoramic view camera. Refer to Module Self-learning and Programming Manual, “360 Panoramic View Camera Calibration”.
4. Fix the trim panel of the 360° panoramic front view camera to the front bumper, fit 3 screws and tighten them.
5. Fit the front bumper.

☞**Front Bumper Refit**

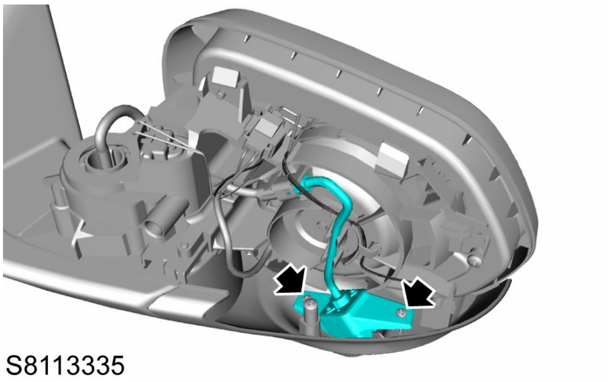
360 Panoramic Side View Camera

Remove

1. Disconnect the negative battery cable.
2. Remove the side direction indicator lamp.

☞**Side Direction Indicator Lamp Remove**

3. Remove 2 screws fixing the camera to the exterior rearview mirror and disconnect the connector.



4. Remove the 360° panoramic side view camera.

Refit

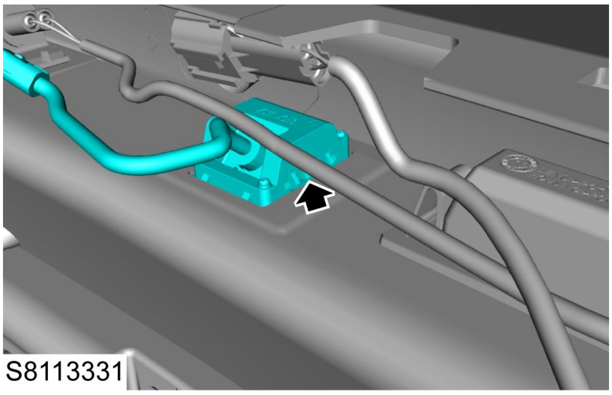
1. Connect the camera connector.
2. Connect the negative battery cable.
3. Programme and encode the 360° panoramic view camera. Refer to Module Self-learning and Programming Manual, “360 Panoramic View Camera Calibration”.
4. Fix the 360° panoramic side view camera to the exterior rearview mirror, fit 2 screws and tighten them.
5. Refit the side direction indicator lamp.

☞**Side Direction Indicator Lamp Refit**

360 Panoramic Rear View Camera

Remove

1. Disconnect the negative battery cable.
2. Disconnect the harness connector.
3. Release the retaining clip and remove the 360° panoramic rear view camera.



Refit

1. Connect the harness connector.
2. Connect the negative battery cable.
3. Programme and encode the 360° panoramic view camera. Refer to Module Self-learning and Programming Manual, “360 Panoramic View Camera Calibration”.
4. Align the locating point of the camera with the mounting hole and press down to engage.

Rear Drive Assist System

Service Procedures

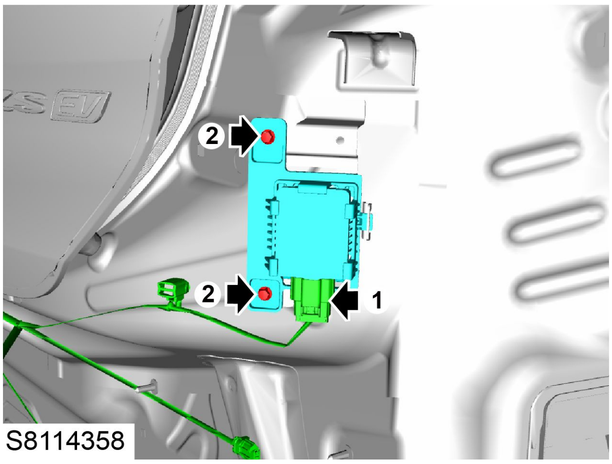
Rear Distant Object Detection Module and Sensor

Remove

1. Disconnect the negative battery cable.
2. Remove the rear bumper.

☞**Rear Bumper Assembly Refit**

3. Remove 2 bolts (2) fixing the right (left) rear distant object detection module and bracket to the body.
4. Disconnect the harness connector (1).



5. Loosen the clip, and remove the rear distant object detection module.

Refit

1. Connect the harness connector of rear distant object detection module.
2. Connect the negative battery cable.
3. Programme and encode the rear distant object detection module (). Refer to Module Self-learning and Programming Manual, "Rear Driver Assist System () ".
4. Fix the rear distant object detection module to the bracket, and secure it with clips.
5. Fix the rear distant object detection module and bracket to the rear bumper, fit and tighten 2 bolts.
6. Fit the rear bumper.

☞**Rear Bumper Assembly Refit**

Pedestrian Alert System

Specifications

Torque

Description	Value
Nut-Pedestrian Alert Control Module to body	5–7Nm
Bolt-Speaker—PED alert to Body	4–6Nm

Service Procedures

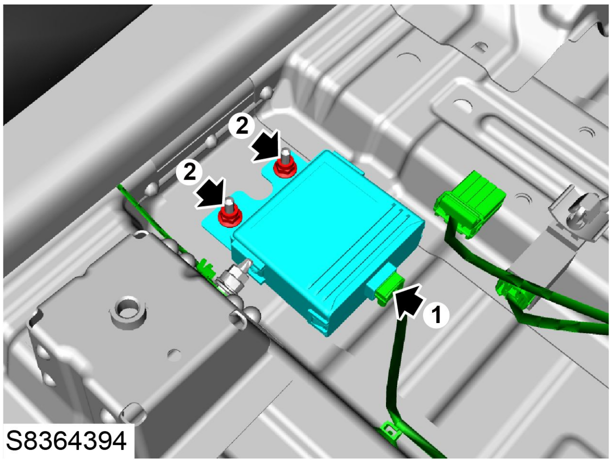
Pedestrian Alert Control Module

Remove

1. Disconnect the negative battery cable.
2. Remove the passenger side assembly.

Front Seat Assembly Remove

3. Disconnect the harness connector (1).
4. Remove 2 nuts (2) fixing the pedestrian alert module to the body. And remove the pedestrian alert module.



Refit

1. Fix the pedestrian alert module to the body, fit 2 nuts, tighten them to **5–7Nm**, and check the torque.
2. Connect the harness connector.
3. Fit the passenger side seat assembly.

Front Seat Assembly Refit

4. Connect the negative battery cable.

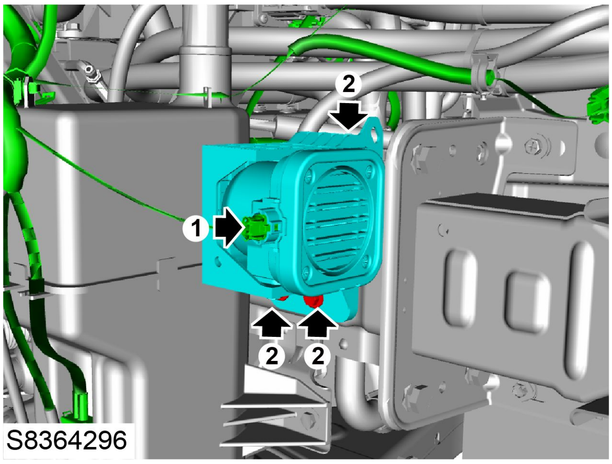
Pedestrian Alert Speaker

Remove

1. Disconnect the negative battery cable.
2. Remove the front bumper.

Front Bumper Remove

3. Disconnect the harness connector (1).
4. Remove 3 bolts (2) fixing the pedestrian alert speaker to the vehicle body, and remove the pedestrian alert speaker.



Refit

1. Fix the pedestrian alert speaker to the body, fit 3 bolts, tighten them to **4–6Nm**, and check the torque.
2. Connect the harness connector.
3. Fit the front bumper.

Front Bumper Refit

4. Connect the negative battery cable.

Vehicle Access

Specifications

Torque

Description	Value
Bolt -PEPS Module Assembly to Body	7–9Nm
Bolt-Back up antenna to Console	1.4–1.8Nm

Service Procedures

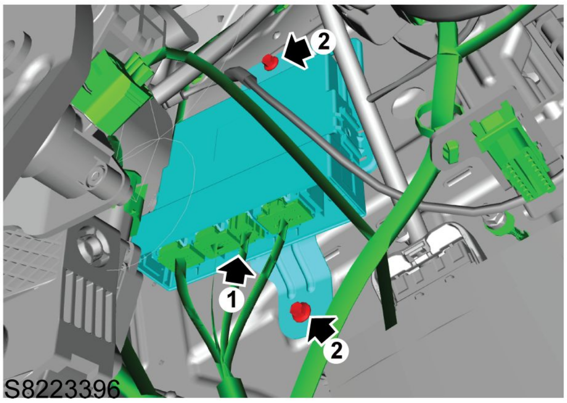
Passive Entry and Passive Start Control Module

Remove

1. Disconnect the negative battery cable.
2. Remove the driver side lower trim panel assembly.

☞**Driver Side Lower Trim Panel Assembly Remove**

3. Disconnect the harness connectors (1) of the PEPS module.
4. Remove 2 bolts (2) fixing the PEPS module assembly to body, and remove the PEPS module assembly.



Refit

1. Connect the harness connector of the PEPS module.
2. Connect the negative battery cable.
3. Programme and encode the PEPS module. Refer to Service Programming & Configuration Self-learning Manual, PEPS replacement.
4. Fix the PEPS module to body, fit 2 bolts, tighten them to **7–9Nm** , check the torque.
5. Fit the driver side lower trim panel assembly.

☞**Driver Side Lower Trim Panel Assembly Refit**

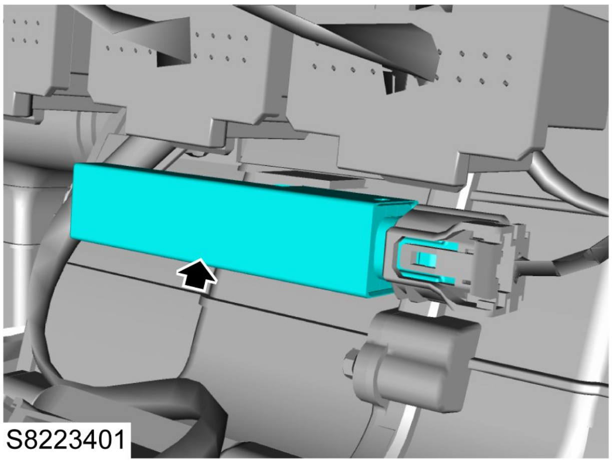
Passive Entry and Passive Start Antenna - Front

Remove

1. Disconnect the negative battery cable.
2. Remove the A/C controller assembly.

☞**A/C Controller Assembly Remove**

3. Disconnect the antenna harness connector, loosen the clip and remove the antenna - front.



Refit

1. Align the antenna locating point with the mounting hole and press down to engage.
2. Connect the antenna harness connector.
3. Fit the A/C controller assembly.

☞**A/C Controller Assembly Refit**

4. Connect the negative battery cable.

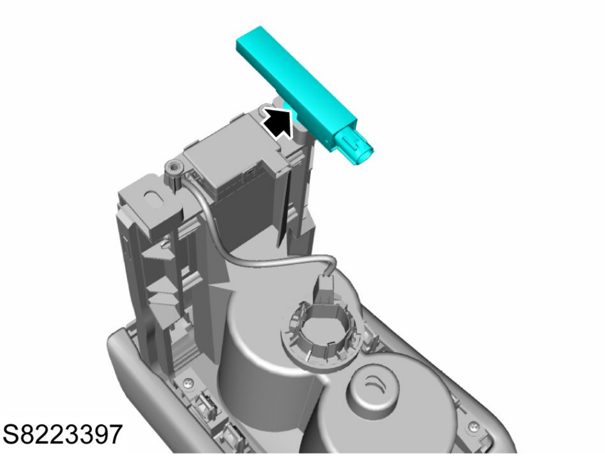
Passive Entry and Passive Start Antenna - Middle

Remove

1. Disconnect the negative battery cable.
2. Remove the centre console assembly.

☞**Centre Console Assembly Remove**

3. Disconnect the antenna harness connector and remove the antenna - middle.



S8223397

Refit

1. Align the antenna locating point with the mounting hole and press down to engage.
2. Connect the antenna harness connector.
3. Fit the centre console assembly.

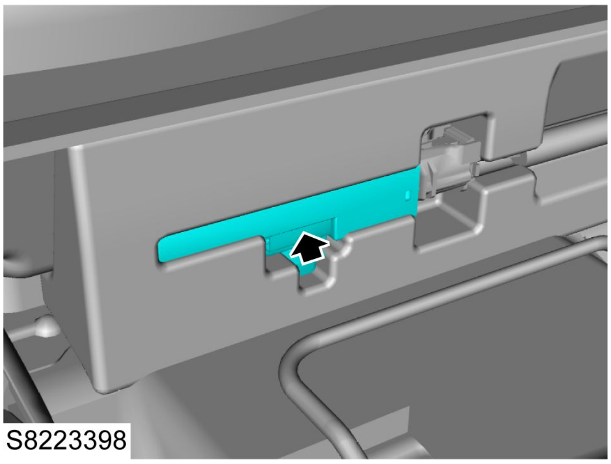
☞**Centre Console Assembly Refit**

4. Connect the negative battery cable.

Passive Entry and Passive Start Antenna - Rear

Remove

1. Disconnect the negative battery cable.
2. Lift up and remove the rear seat cushion assembly.
3. Disconnect the antenna harness connector.
4. Remove the antenna - rear.



S8223398

Refit

1. Connect the antenna harness connector.
2. Fit the antenna in the mounting hole and press down to engage.
3. Fit and secure the rear seat cushion assembly by fitting the rear seat cushion clips in place.
4. Connect the negative battery cable.

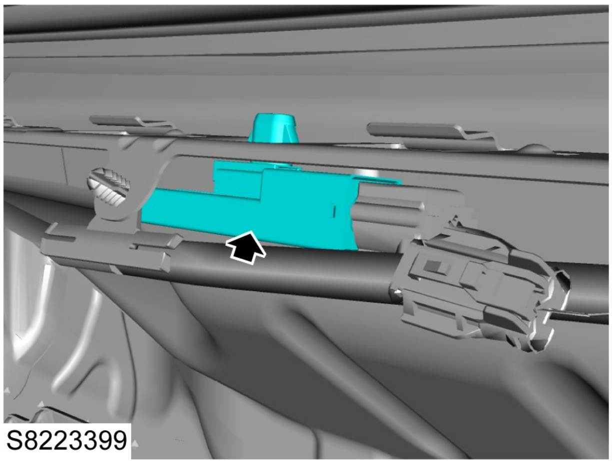
Passive Entry and Passive Start Antenna - Rear Bumper Fascia

Remove

1. Disconnect the negative battery cable.
2. Remove the rear bumper.

☞**Rear Bumper Remove**

3. Disconnect the antenna harness connector and remove the antenna - rear bumper fascia.



Refit

1. Align the antenna locating point with the mounting hole and press down to engage.
2. Connect the antenna harness connector.
3. Fit the rear bumper.

☞**Rear Bumper Refit**

4. Connect the negative battery cable.

Passive Entry and Passive Start Antenna - Door Handle

Remove

1. For vehicles equipped with **PEPS** module, the outer door handle antenna and switch units (HSU) are respectively fitted in the driver side door outer handle and the front passenger side door outer handle, so the door handle antenna can be replaced by replacing the door handle assembly.

☞**Driver Door Outer Handle and Lock Cylinder Assembly Remove**

☞**Front Passenger Side Door Outer Handle and Lock Cylinder Remove**

Refit

1. Fit the passive entry and passive start antenna - door handle.

☞**Driver Door Outer Handle and Lock Cylinder Assembly Refit**

☞**Front Passenger Side Door Outer Handle and Lock Cylinder Refit**

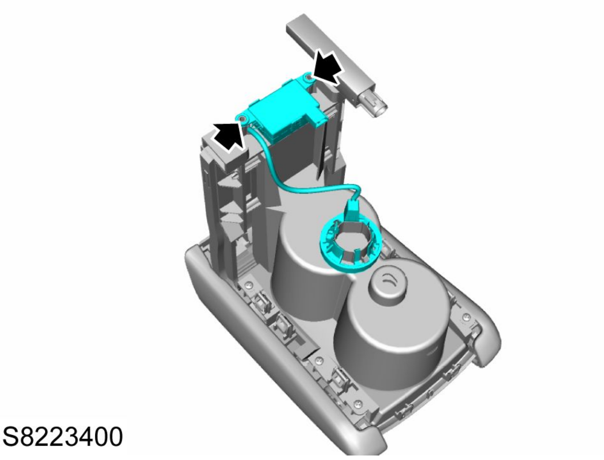
Back Up Antenna

Remove

1. Disconnect the negative battery cable.
2. Remove the centre console assembly.

☞**Centre Console Assembly Remove**

3. Disconnect the back up antenna connector.
4. Remove 2 screws fixing the back up antenna to the centre console.
5. Rotate the back up antenna to remove it.



S8223400

Refit

1. Fit the back up antenna to the mounting position, slightly turn it to secure it.
2. Connect the connector of the backup antenna.
3. Fit the backup antenna with 2 screws, tighten them to **1.4–1.8Nm**, check the torque.
4. Fit the centre console assembly.

☞**Centre Console Assembly Refit**

5. Connect the negative battery cable.

Drive Assistant System

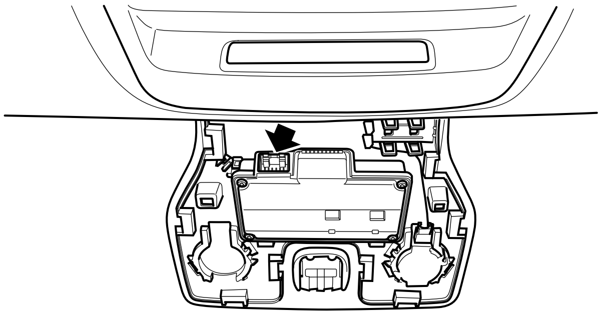
Service Procedures

Front View Camera Module

Remove

1. Disconnect the negative battery cable.
2. Remove the interior rearview mirror cover.
3. Disconnect the harness connector of the front view camera module.
4. Loosen the clip with a tool, and remove the front view camera module.

Caution: Immediately place suitable covers over the view point holes in the camera and bracket to avoid the entry of moisture or debris.



S8163010

Refit

1. Fit the front view camera module and secure it with clips.

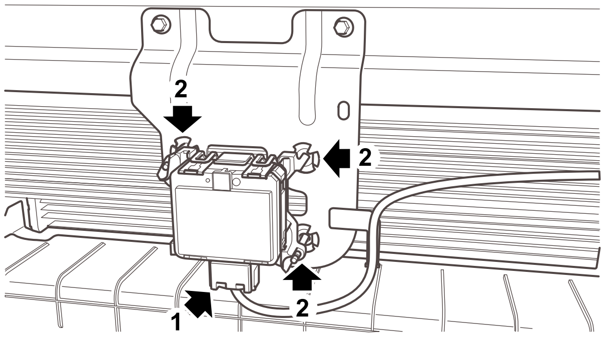
Caution: After removal of the protective covers please ensure the refit operation is completed within 10 seconds so as to avoid contamination of debris or moisture.

2. Connect the harness connector of the front view camera module.
3. Fit the interior rearview mirror cover.
4. Connect the negative battery cable.
5. Operate self-learning for the front view camera module. Refer to Module Self-learning and Programming Manual "Front View Camera Module (FVCM) Self-learning".

Front Detection Radar Module

Remove

1. Disconnect the negative battery cable.
2. Remove the front bumper lower trim cover and the front detection radar cover.
3. Disconnect the harness connector (1) of the front detection radar.
4. Remove 3 plastic clips (2) fixing the front detection radar to the bracket.

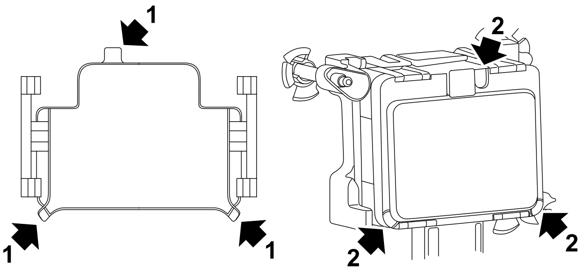


S8163009

5. Remove the front detection radar.

Refit

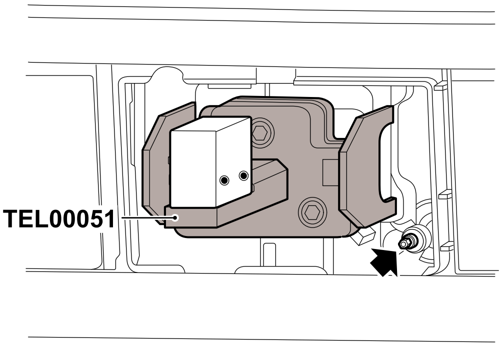
1. Locate the front detection radar to the bracket.
2. Connect the harness connector of the front detection radar.
3. Connect the negative battery cable.
4. Move the vehicle onto the wheel aligner.
5. Align 3 locating lugs (1) of special tool **TEL00051** with 3 locating grooves (2) on the front detection radar, and fix the special tool to the front detection radar with the 2 clamping jaws of special tool **TEL00051**.



S8163002

6. Operate self-learning for the front detection radar in vertical direction.
   a. Place the radar calibration level on the wheel aligner and carry out a zero point calibration.

b. Place the radar level after zero point calibration on the appropriate position of special tool **TEL00051**. Adjust the adjusting bolt on the lower right of the front detection radar until the radar calibration level value is -2degrees (pointing slightly downwards).

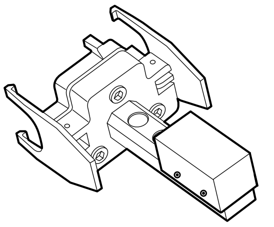


S8163008

c. Remove the radar calibration level and special tool**TEL00051**.

7. Operate self-learning for the front detection radar in horizontal direction. Refer to Module Self-learning and Programming Manual, “Front Detection Radar Self-learning”. If necessary, adjust the adjusting bolt on the upper left of the front detection radar according to the prompts.
8. Fit the front bumper lower trim cover and the front detection radar cover.

Special Tools

Tool Number	Description	Picture
TEL00051	Front radar alignment spirit level	 TEL00051

Entertainment and Navigation

Specifications

Torque

Description	Value
Screw-Duo-cone speaker to front door	1–2Nm
Screw-Duo-cone speaker to rear door	1–2Nm
Bolt-T-box to cross car beam	7–10Nm
Bolt-Antenna to Instrument Panel	1.3–1.9Nm
Screw-Communications antenna	3-4Nm

Service Procedures

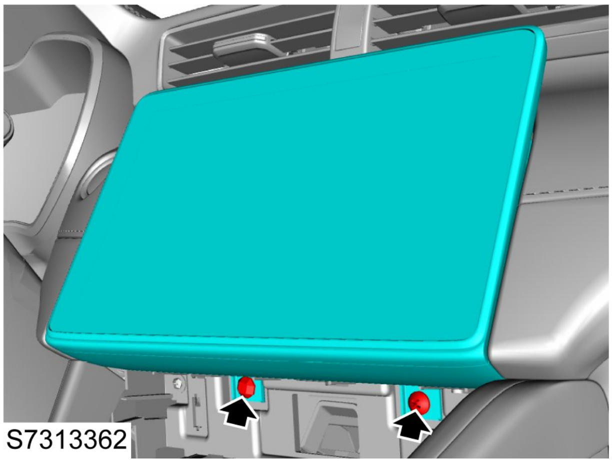
Front Infotainment Control Module (FICM)

Remove

1. Disconnect the negative battery cable.
2. Remove the entertainment panel switch.

☞**Entertainment Panel Switch Remove**

3. Remove 2 screws fixing the FICM to the instrument panel.



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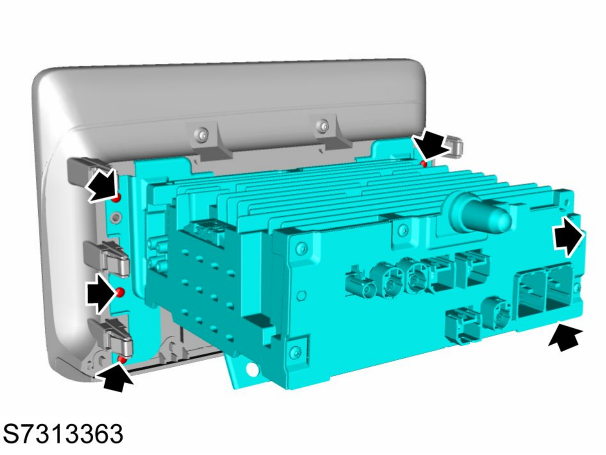
4. Disconnect the harness connector, loosen the clip and remove the FICM.
5. Remove 6 screws fixing the display to the FICM, and remove the FICM and the display.



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Refit

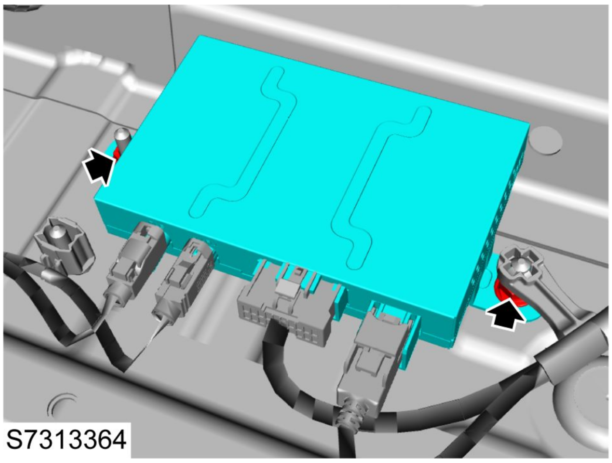
1. To replace high configuration entertainment mainframe, report SN code to TCMP.
2. Connect the harness connector.
3. Connect the negative battery cable.
4. Program and encode the front infotainment control module (FICM). Refer to Module Self-learning and Programming Manual - "Front Information Control Module (FICM)".
5. After confirming that the FICM can work normally, fix the display to the FICM, fit 6 screws and tighten them.
6. Fix the FICM assembly to the instrument panel, fit 2 screws, tighten them to 1.4-1.8Nm, and check the torque.
7. Fit the entertainment panel switch.

☞**Entertainment Panel Switch Refit**

DAB Module

Remove

1. Disconnect the negative battery cable.
2. Pull open the DAB module service access under the driver seat.
3. Loosen the harness clip from the DAB module retaining nut.
4. Remove 2 nuts fixing the DAB module to the body.



5. Disconnect the harness connector and remove the DAB module.

Refit

1. Connect the harness connector.
2. Fix the DAB module to the body, fit 2 nuts and tighten them to TBD, and check the torque.
3. Fix the harness clip to the DAB module retaining nut.
4. Recover the service access.
5. Connect the negative battery cable.

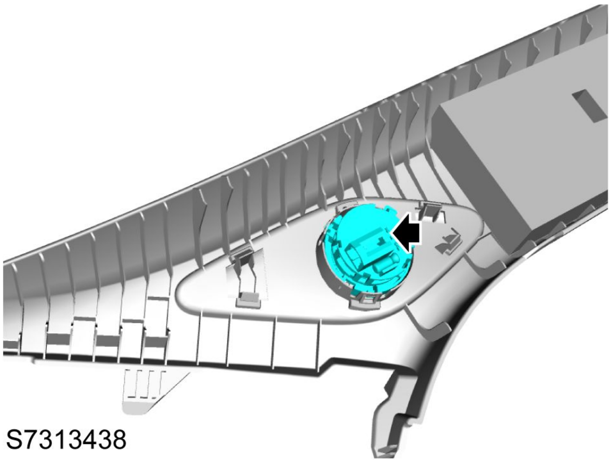
Front Door Tweeter

Remove

1. Disconnect the negative battery cable.
2. Remove the A pillar upper trim panel.

☞**A Pillar Upper Trim Panel Remove**

3. Loosen the retaining clip and remove the front tweeter.



Refit

1. Push the tweeter into the A pillar upper trim panel and ensure the clips are fully engaged.
2. Fit the A pillar upper trim panel.

☞**A Pillar Upper Trim Panel Refit**

3. Connect the negative battery cable.

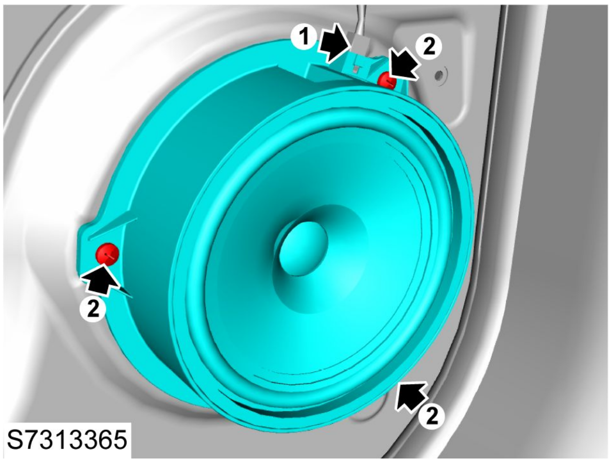
Front Door Woofer

Remove

1. Disconnect the negative battery cable.
2. Remove the front door interior trim panel.

☞**Front Door Interior Trim Panel Remove**

3. Disconnect the harness connector (1) of the woofer.
4. Remove 3 screws (2) fixing the woofer to the front door.



5. Remove the front door woofer.

Refit

1. Fix the front door woofer to the front door, fit 3 screws, tighten them to **1–2Nm**, and check the torque.
2. Connect the harness connector of the woofer.
3. Fit the front door interior trim panel.

☞**Front Door Interior Trim Panel Refit**

4. Connect the negative battery cable.

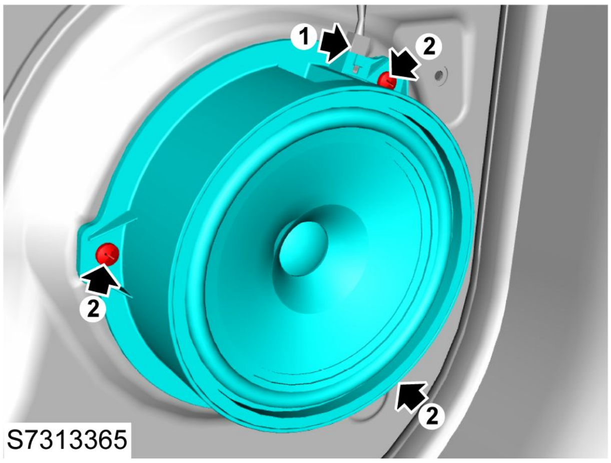
Rear Door Woofer

Remove

1. Disconnect the negative battery cable.
2. Remove the rear door interior trim panel.

☞**Rear Door Interior Trim Panel Remove**

3. Disconnect the harness connector (1) of the woofer.
4. Remove 3 screws (2) fixing the woofer to the rear door.



5. Remove the rear door woofer.

Refit

1. Fix the rear door woofer to the rear door, fit 3 screws, tighten them to **1–2Nm**, and check the torque.
2. Connect the harness connector of the woofer.
3. Fit the rear door interior trim panel.

☞**Rear Door Interior Trim Panel Refit**

4. Connect the negative battery cable.

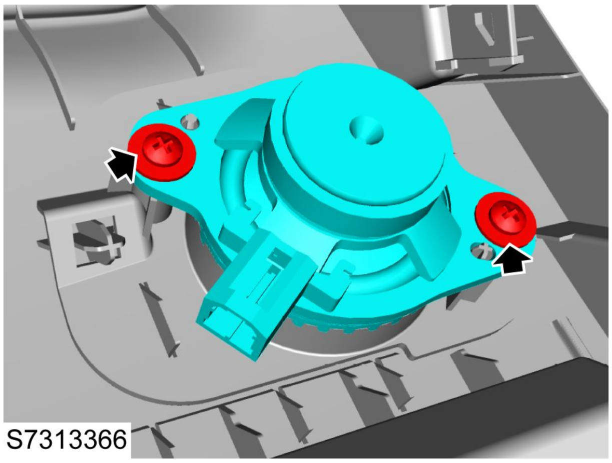
ECall Speaker

Remove

1. Disconnect the negative battery cable.
2. Remove the driver side lower trim panel.

☞**Driver Side Lower Trim Panel Remove**

3. Remove 2 screws fixing the eCall speaker to the trim panel, and remove the eCall speaker.



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Refit

1. Fix the eCall speaker to the trim panel, fit 2 screws and tighten them.
2. Fit the driver side lower trim panel.

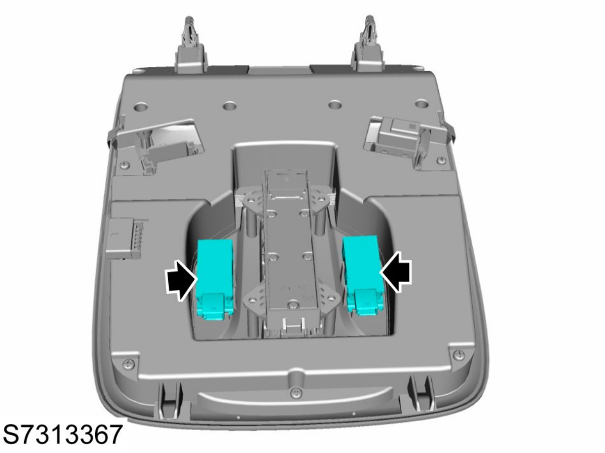
☞**Driver Side Lower Trim Panel Refit**

3. Connect the negative battery cable.

Microphone

Remove

1. Disconnect the negative battery cable.
2. Remove the roof console.
3. Disconnect the harness connector.
4. Loosen the retaining clip and remove the microphone.



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Refit

1. Fix the microphone to the roof console.
2. Connect the harness connector.
3. Fit the roof console.
4. Connect the negative battery cable.

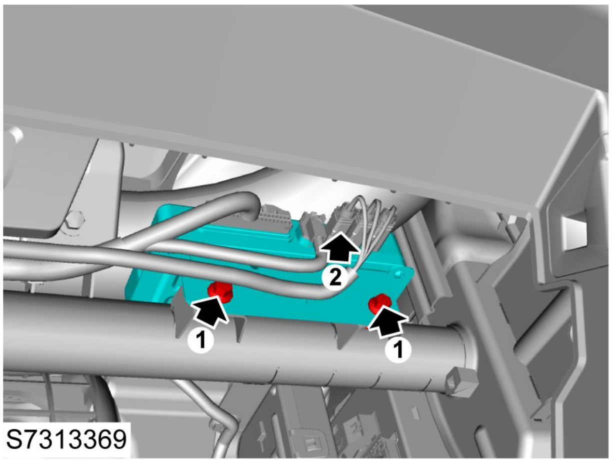
Communication Module (TBOX)

Remove

1. Disconnect the negative battery cable.
2. Remove the glove box assembly.

☞**Glove Box Assembly Remove**

3. Remove 2 bolts (1) fixing the communication module to the instrument panel beam.
4. Disconnect the harness connector (2) of the communication module and remove the communication module.



Refit

1. Report SN code and ICCID code to TCMP.
2. Connect the harness connector of the communication module.
3. Connect the negative battery cable.
4. Program and encode the **TBOX**. For details, please refer to Module Self-Learning and Programming Manual - Communication Module (**TBOX**).
5. Fix the communication module to the instrument panel beam, fit 2 bolts, tighten them to **7–10Nm**, and check the torque.
6. Fit the glove box assembly.

☞**Glove Box Assembly Refit**

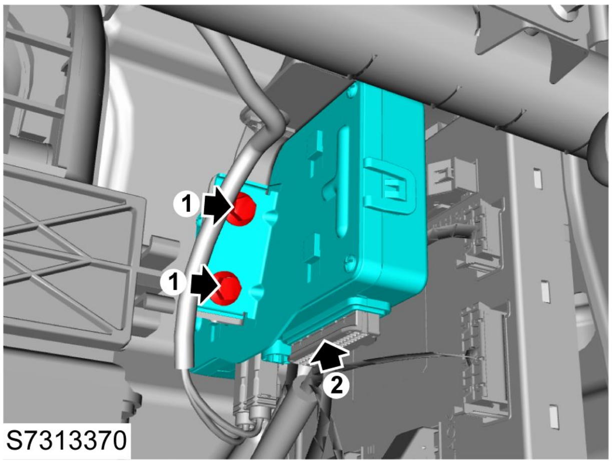
ECall Communication Module

Remove

1. Disconnect the negative battery cable.
2. Remove the glove box assembly.

☞**Glove Box Assembly Remove**

3. Remove 2 bolts (1) fixing the eCall communication module to the instrument panel beam.
4. Disconnect the harness connector (2) of the eCall communication module and remove the eCall communication module.



Refit

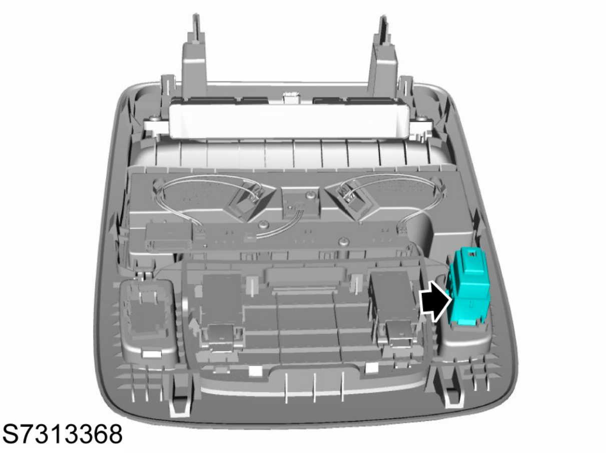
1. To replace the eCall communication module, you need to enter the following path "Diagnosis -TAC Q&A -AVN/TBOX/FICM Replacement Inquiry" in SAIC Self-Service System (SNW) and input relevant information. It needs to confirm that the status is submitted.
2. Connect the harness connector of the eCall communication module.
3. Connect the negative battery cable.
4. Programme and encode the eCall **TBOX**. For details, please refer to Module Self-Learning and Programming Manual - ECall Communication Module (ECall **TBOX**).
5. Fix the eCall communication module to the instrument panel beam, fit 2 bolts, tighten them to **7–10Nm**, and check the torque.
6. Fit the glove box assembly.

☞**Glove Box Assembly Refit**

ECall Switch

Remove

1. Disconnect the negative battery cable.
2. Remove the roof console.
3. Disconnect the harness connector.
4. Loosen the retaining clip and remove the eCall switch.



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Refit

1. Fix the eCall switch to the roof console.
2. Connect the harness connector.
3. Fit the roof console.
4. Connect the negative battery cable.

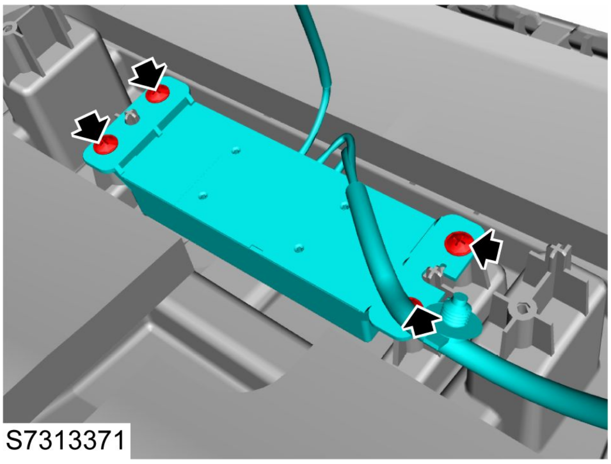
Communication Module Antenna

Remove

1. Disconnect the negative battery cable.
2. Remove the instrument panel body assembly.

☞**Instrument Panel Body Assembly Remove**

3. Disconnect the harness connector.
4. Remove 4 screws fixing the communication antenna on the instrument panel, and remove the communication module antenna.



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Refit

1. Fix the communication module antenna to the instrument panel, fit 4 screws, tighten them to **1.3–1.9Nm**, and check the torque.
2. Connect the harness connector.
3. Fit the instrument panel body assembly.

☞**Instrument Panel Body Assembly Refit**

4. Connect the negative battery cable.

Roof Antenna

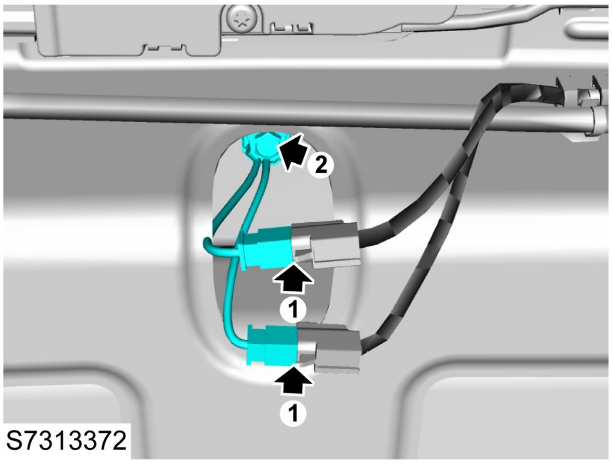
Remove

1. Disconnect the negative battery cable.
2. Remove the roof trim panel assembly.

☞**Roof Trim Panel Assembly - without Sunroof Remove**

☞**Roof Trim Panel Assembly - with Sunroof Remove**

3. Disconnect the harness connector (1) of the roof antenna.
4. Remove 1 bolt (2) fixing the roof antenna to the body, and remove the roof antenna.



Refit

1. Fix the roof antenna to the body, fit 1 bolt, tighten it to **3-4Nm**, and check the torque.
2. Connect the harness connector of the roof antenna.
3. Fit the roof trim panel assembly.

☞**Roof Trim Panel Assembly - without Sunroof Refit**

☞**Roof Trim Panel Assembly - with Sunroof Refit**

4. Connect the negative battery cable.

Displays and Gauges

Specifications

Torque

Description	Value
Bolt-Clusters to Instrument Panel	1.3–1.9Nm

Service Procedures

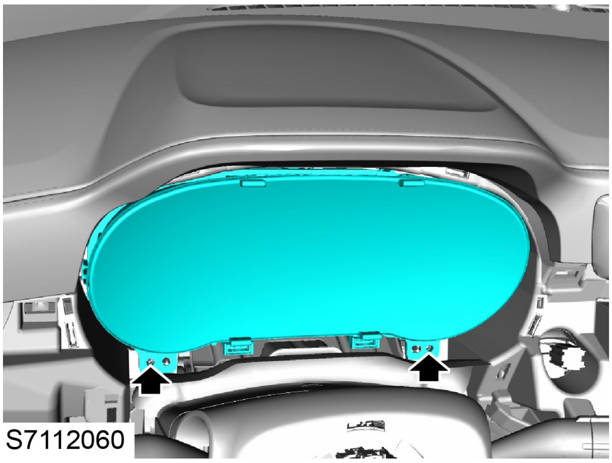
Instrument Pack

Remove

1. Disconnect the negative battery cable.
2. Remove the instrument panel IPK frame assembly.

☞**Instrument Panel IPK Frame Assembly Remove**

3. Remove 2 screws fixing the instrument pack to the instrument panel.



4. Disconnect the harness connector and remove the instrument pack.

Refit

1. Connect the harness connector.
2. Connect the negative battery cable.
3. Program and encode the instrument pack (IPK). Refer to Module Self-learning and Programming Manual - "Instrument Pack (**IPK**)".
4. Fix the instrument pack to the instrument panel, fit 2 screws, tighten them to **1.3–1.9Nm**, and check the torque.
5. Fit the instrument panel IPK frame assembly.

☞**Instrument Panel IPK Frame Assembly Refit**

Low Voltage Fusebox

Specifications

Torque

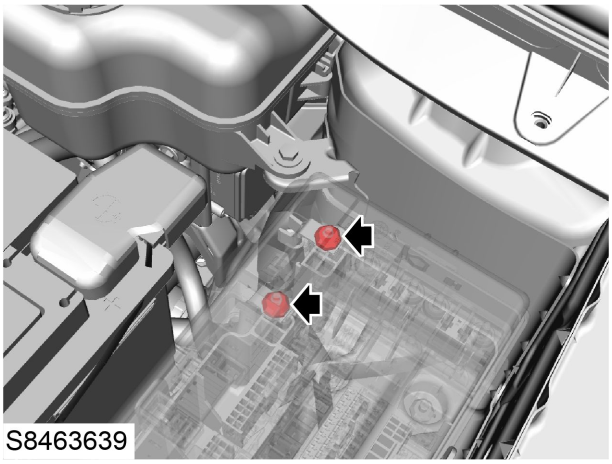
Description	Value
Bolt-Front fuse box pedestal to Body	7–10Nm
Nut-Harness to front fuse box	7–10Nm

Service Procedures

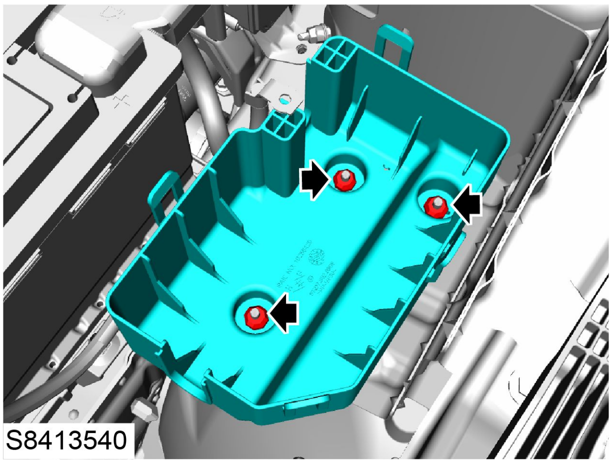
Front Compartment Fuse Box

Remove

1. Disconnect the negative battery cable.
2. Loosen the clips and remove the upper cover of the front compartment fuse box.
3. Remove 2 nuts fixing the harness and cable to the front compartment fuse box.



4. Loosen the clip fixing the front compartment fuse box to the fuse box base and lift the front compartment fuse box.
5. Disconnect the harness connector, and remove the front compartment fuse box.
6. Remove 3 nuts fixing the fuse box base to the body and remove the fuse box base.



Refit

1. Fix the front compartment fuse box base to the body, fit 3 nuts, tighten them to **7–10Nm**, and check the torque.
2. Connect the harness connector to the back of the front compartment fuse box.
3. Fix the front compartment fuse box to the fuse box base with clips.
4. Fix the harness and bracket to the front compartment fuse box, fit 2 nuts, tighten them to **7–10Nm**, and check the torque.
5. Fit the fuse box upper cover.
6. Connect the negative battery cable.

Battery Fuse Box & Management System

Specifications

Torque

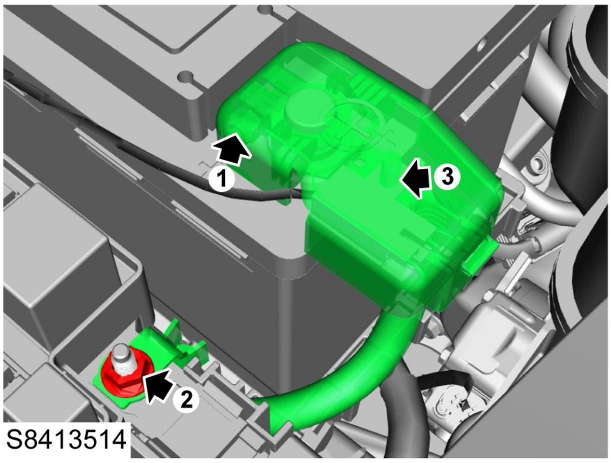
Description	Value
Nut-Battery positive cable to fuse box	7–10Nm
Nut-Battery positive cable to battery	4–6Nm
Nut-Battery negative cable to body	7–10Nm
Nut-Battery negative cable to EBS	7–10Nm
Bolt-Battery clip to battery tray	19–25Nm
Nut-EBS to clamp	4.5–7.5Nm
Nut-EBS to battery	4.5–7.5Nm
Bolt-Battery tray to body	19–25Nm
Bolt-Battery tray bracket to body	19–25Nm

Service Procedures

Positive Battery Cable

Remove

1. Disconnect the negative battery cable.
2. Remove the upper cover of the front compartment fuse box.
3. Open the cover of the positive terminal, loosen 1 nut (1) fixing the positive battery cable to the terminal, and remove the cable.
4. Remove 1 nut (2) fixing the positive battery cable to the front compartment fuse box, and remove the cable.
5. Remove 1 nut (3) fixing the body harness to the positive battery cable, and remove the harness.



6. Remove the positive battery cable.

Refit

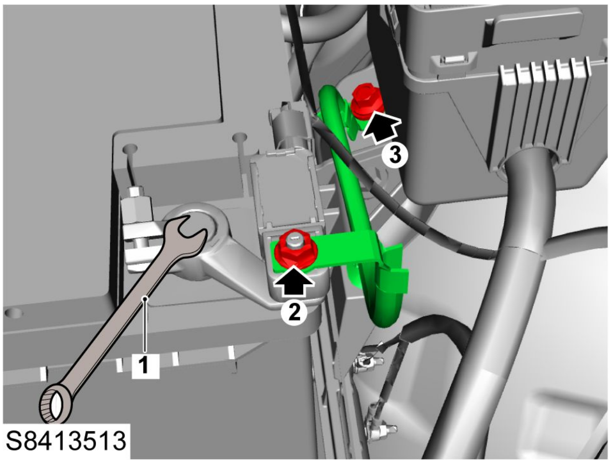
1. Fix the body harness to the positive battery cable, fit and tighten 1 nut.
2. Fix the positive battery cable to the front compartment fuse box, fit 1 nut, tighten it to **7–10Nm**, and check the torque.
3. Fix the positive battery cable to the positive terminal, tighten the nut to **4–6Nm**, and check the torque.
4. Fit the cover of the positive terminal.
5. Fit the upper cover of the front compartment fuse box.
6. Connect the negative battery cable.

Negative Battery Cable

Remove

Caution: Always use a second 'locking spanner' to prevent damage to the battery sensor.

1. Hold the negative battery terminal with an open-end wrench (1) to fix the **EBS**. Remove 1 nut (2) fixing the negative battery cable to the battery sensor.
2. Remove 1 nut (3) fixing the negative battery cable to the body.
3. Loosen the harness clip and remove the negative battery cable.



Refit

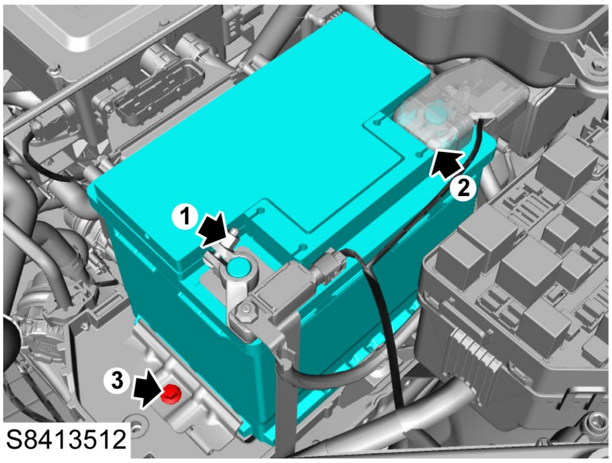
Caution: Always use a second 'locking spanner' to prevent damage to the battery sensor.

1. Fit the harness clip and fix the negative battery cable.
2. Fix the negative battery cable to the body, fit 1 nut, tighten it to **7–10Nm**, and check the torque.
3. Hold the negative battery terminal with an open-end wrench to fix the **EBS**, fit the nut fixing the negative battery cable to the **EBS**, tighten it to **7–10Nm**, and check the torque.

Battery

Remove

1. Loosen 1 nut (1) fixing the battery sensor to the negative terminal, and remove the sensor.
2. Open the cover of the positive battery terminal, loosen 1 nut (2) fixing the positive battery cable to the battery terminal, and remove the cable.
3. Remove the battery bandage.
4. Remove 1 bolt (3) fixing the battery retaining plate to the battery tray, and remove the battery retaining plate.



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5. Remove the battery assembly.

Refit

Caution: Always use a second 'locking spanner' to prevent damage to the battery sensor.

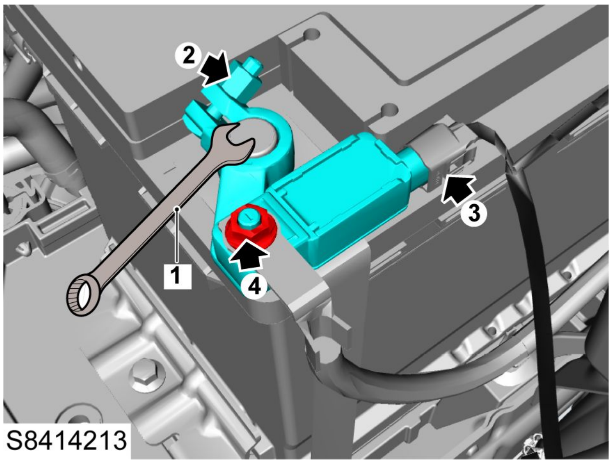
1. Fix the battery to the battery tray.
2. Fix the battery with the retaining plate, fit 1 bolt, tighten it to **19–25Nm**, and check the torque.
3. Fit the battery bandage.
4. Fix the positive battery cable to the battery terminal, fit 1 nut, tighten it to **4–6Nm**, and check the torque.
5. Close the cover of the positive battery terminal.
6. Fix the **EBS** to the negative terminal, tighten it to **4.5–7.5Nm**, and check the torque.
7. Perform "Write Battery ID" for the battery sensor. Refer to Module Self-learning and Programming Manual.

Battery Sensor

Remove

Caution: Always use a second 'locking spanner' to prevent damage to the battery sensor.

1. Hold the negative battery terminal with an open-end wrench (1) to fix the **EBS**.
2. Remove 1 nut (4) fixing the negative battery cable to the battery sensor, and remove the negative battery cable.
3. Disconnect the harness connector (3) of the battery sensor.
4. Loosen the nut (2) fixing the battery sensor to the negative terminal.



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5. Remove the battery sensor.

Refit

Caution: Always use a second 'locking spanner' to prevent damage to the battery sensor.

1. Clamp the **EBS** negative terminal to the negative battery terminal, and rotate the **EBS** to the bottom and adjust it.
2. Tighten the negative terminal nut to **4.5–7.5Nm**, and check the torque.
3. Connect the battery sensor connector.
4. Fit the negative battery cable onto the **EBS** connecting post, hold the negative battery terminal with an open-end wrench, fit 1 nut, tighten it to **7–10Nm**, and check the torque.
5. Perform "Write Battery ID" for the battery sensor (**EBS**). Refer to Module Self-learning and Programming Manual.

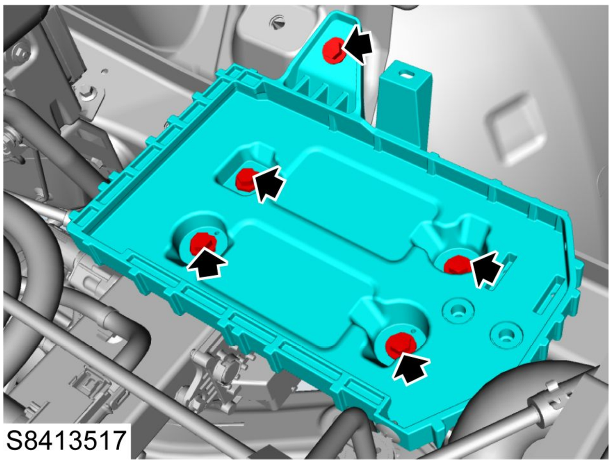
Battery Tray

Remove

1. Remove the battery.

☞**Battery Remove**

2. Remove 5 bolts fixing the battery tray to the battery tray bracket.



3. Loosen the clip from the battery tray and remove the battery tray.

Refit

1. Arrange the harness to the battery tray and secure it with clips.
2. Fix the battery tray to the body, fit 5 bolts, tighten them to **19–25Nm**, and check the torque.
3. Fit the battery assembly.

☞**Battery Refit**

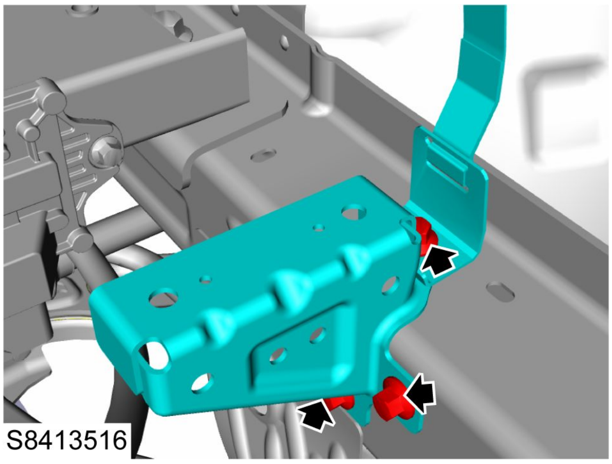
Battery Tray Bracket

Remove

1. Remove the battery tray.

☞**Battery Tray Remove**

2. Remove 3 bolts fixing the battery tray bracket and bandage to the left front longitudinal beam.



3. Loosen the harness clip, and remove the battery tray bracket and bandage.

Refit

1. Fix the battery tray bracket and bandage to the left front longitudinal beam, fit 3 bolts, tighten them to **19–25Nm**, and check the torque.
2. Fix the harness clip to the battery tray bracket.
3. Fit the battery tray.

☞**Battery Tray Refit**

Low Voltage Harness

Service Procedures

Instrument Harness

Remove

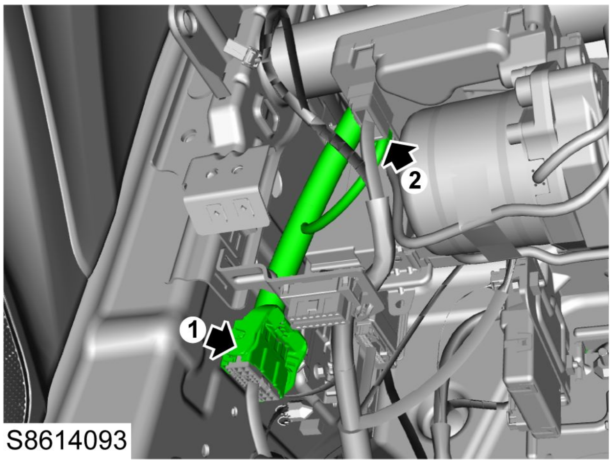
1. Disconnect the negative battery cable.
2. Remove the instrument panel body assembly.

☞**Instrument Panel Body Assembly Remove**

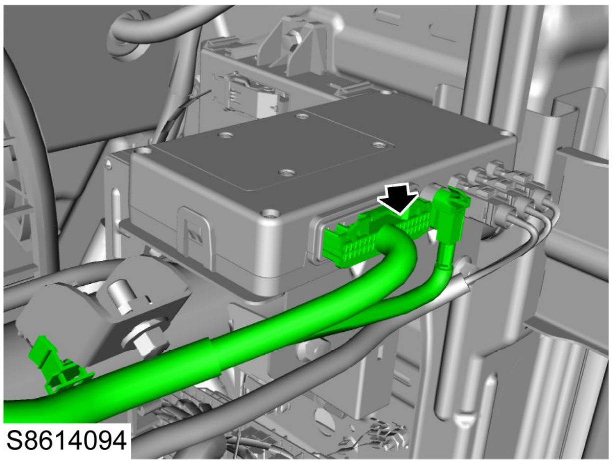
3. Remove the driver side A pillar lower trim panel.

☞**A Pillar Lower Trim Panel Remove**

4. Disconnect the connector (1) from the body harness (drive side).
5. Disconnect the harness connector (2) from the EPS control unit.



6. Disconnect the harness connector from the communication module.



7. Loosen the harness clip, and remove the instrument panel harness.

Refit

1. Fix the instrument panel harness to the instrument panel beam, and secure it with clips.
2. Connect the harness connector to the communication module.
3. Connect the harness connector to the EPS control unit.
4. Connect the connector to the body harness (driver side).
5. Fit the driver side A pillar lower trim panel.

☞**A Pillar Lower Trim Panel Refit**

6. Fit the instrument panel body assembly.

☞**Instrument Panel Body Assembly Refit**

7. Connect the negative battery cable.

Body Harness

Remove

1. Disconnect the negative battery cable.
2. Remove the manual service disconnect.

☞**Manual Service Disconnect Remove**

3. Remove the front bumper assembly.

☞**Front Bumper Remove**

4. Remove the radiator airflow deflector - upper left.

☞**Radiator Airflow Deflector - Upper Remove**

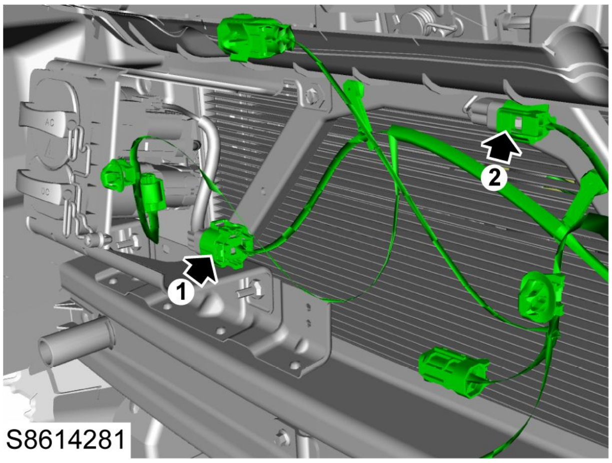
5. Remove the battery tray.

☞**Battery Tray Remove**

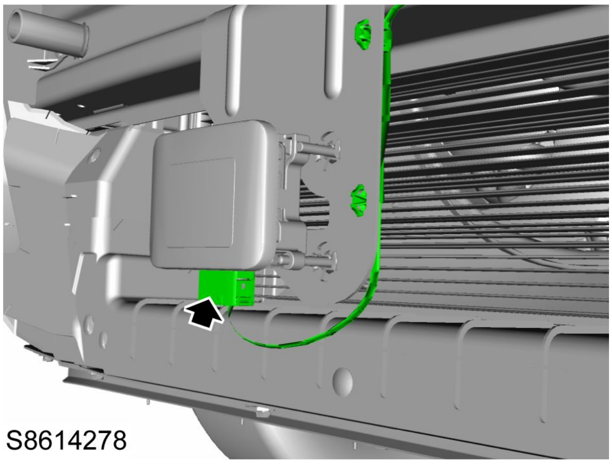
6. Remove the front compartment fuse box.

☞**Front Compartment Fuse Box Remove**

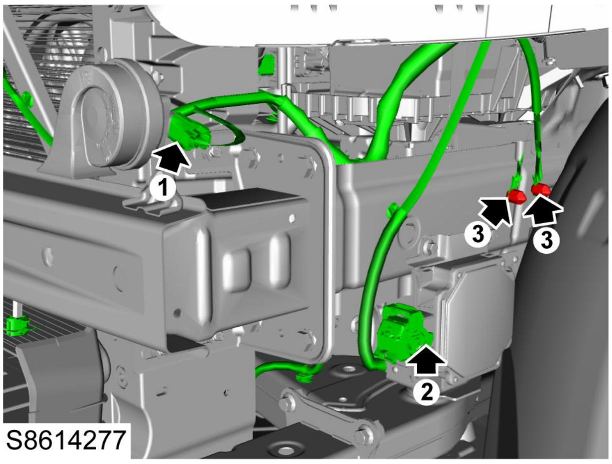
7. Disconnect the low voltage harness connector (1) of the charging port.
8. Disconnect the harness connector (2) of the bonnet lock.



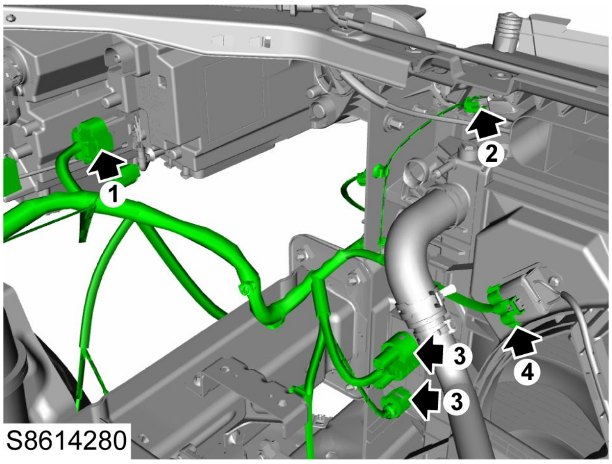
9. Disconnect the harness connector of the forward detection radar.



10. Disconnect the harness connector (1) of the left horn.
11. Disconnect the harness connector (2) of the electric vehicle communication controller module assembly.
12. Disconnect the outer ground terminal (3) of the front left longitudinal beam.



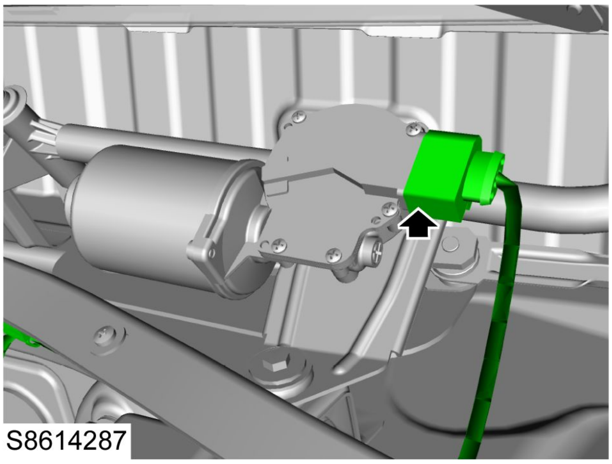
13. Disconnect the harness connector (1) of the left headlamp.
14. Disconnect the harness connector (2) of the front left impact sensor.
15. Disconnect the harness connector (3) of the cooling fan relay.
16. Disconnect the harness connector (4) of the cooling fan motor.



17. Remove the A/C air inlet grille.

☞**A/C Air Inlet Grille Assembly Remove**

18. Disconnect the harness connector of the front wiper motor.



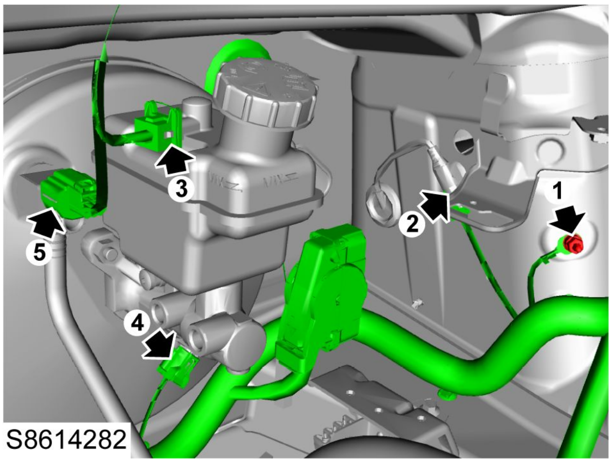
19. Remove the coolant expansion tank.

☞**Coolant Expansion Tank - PEB Remove**

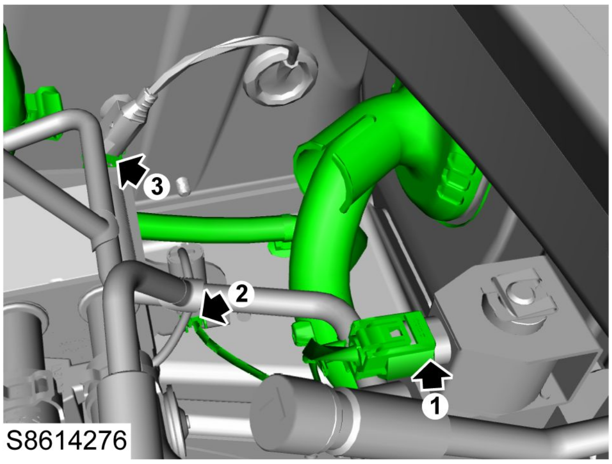
20. Remove the brake modulator.

☞**Brake Modulator Remove**

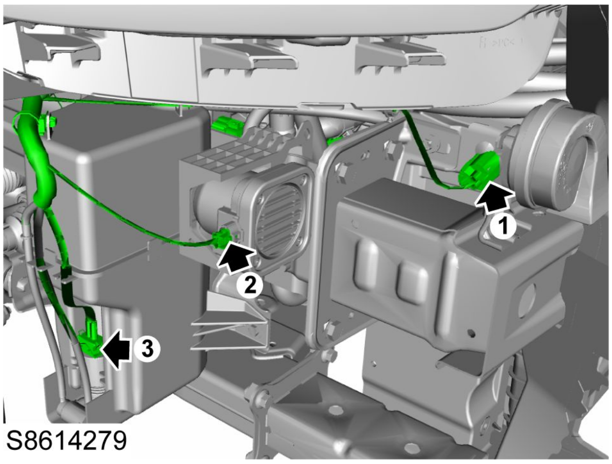
21. Disconnect the ground terminal (1) behind the front compartment fuse box.
22. Disconnect the harness connector (2) of the front left wheel speed sensor.
23. Disconnect the harness connector (3) of the brake fluid level sensor.
24. Disconnect the harness connector (4) of the brake push rod stroke sensor.
25. Disconnect the harness connector (5) of the vacuum sensor.



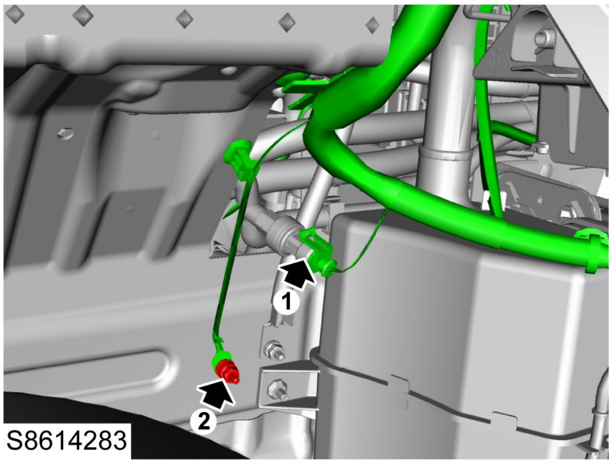
26. Loosen the ground terminal on the lower right side of the brake fluid tank.
27. Disconnect the harness connector (1) of the expansion valve.
28. Disconnect the harness connector (2) of the battery chiller.
29. Disconnect the harness connector (3) of the front right wheel speed sensor.



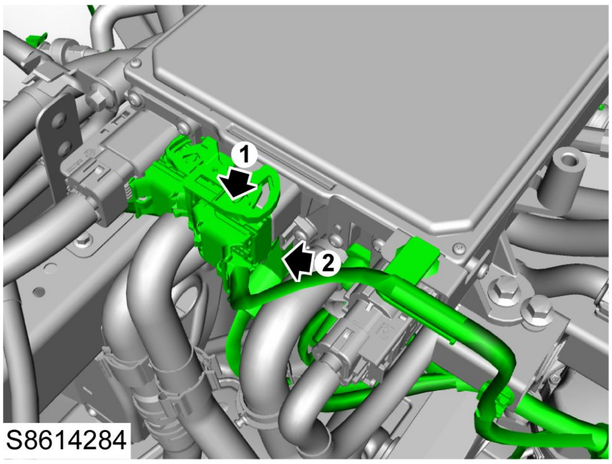
30. Disconnect the harness connector of the right headlamp.
31. Disconnect the harness connector of the front right impact sensor.
32. Disconnect the harness connector (1) of the right horn.
33. Disconnect the harness connector (2) of the pedestrian alert speaker.
34. Disconnect the harness connector (3) of the windscreen washer pump.



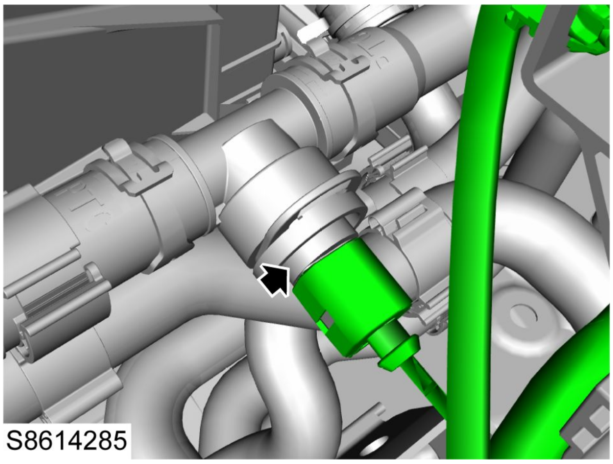
35. Disconnect the harness connector (1) of the A/C pressure switch.
36. Loosen the ground terminal (2) below the A/C pressure switch.



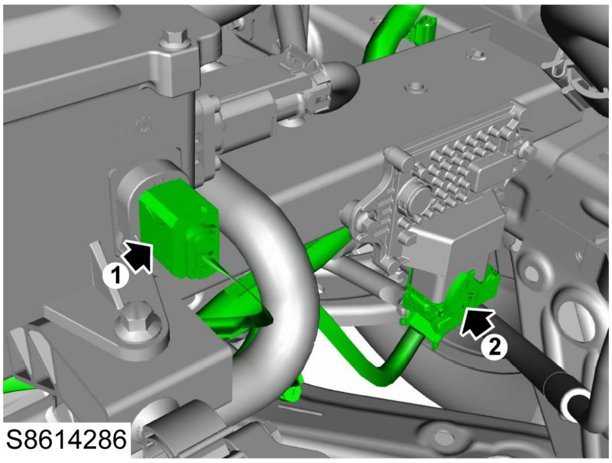
37. Disconnect the low-voltage harness connector (1) of the combined charging unit.
38. Open the combined charging unit harness cover (2), remove 1 bolt fixing the body harness to the combined charging unit, and remove the body harness.



39. Disconnect the harness connector of the water temperature sensor.



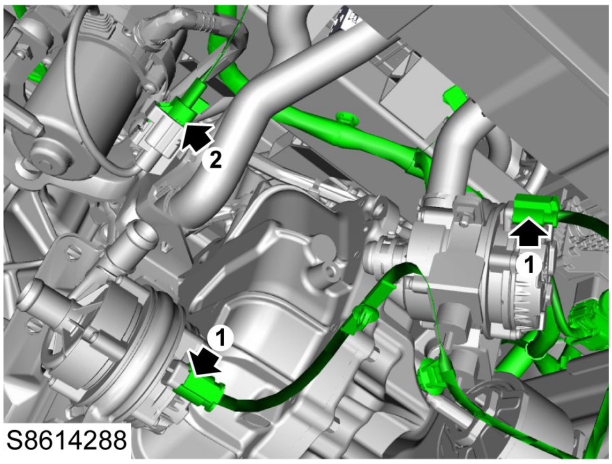
40. Disconnect the low-voltage harness connector (1) of the high-voltage PDU.
41. Disconnect the harness connector (2) of the electrical park motor control module.



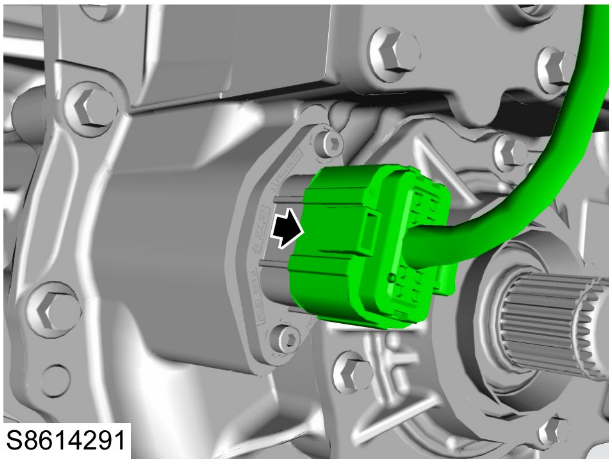
42. Remove the bottom deflector assembly.

☞Bottom Deflector Assembly Remove

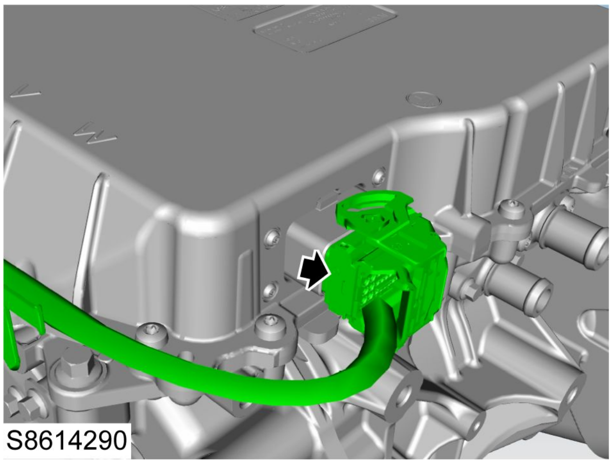
43. Disconnect the harness connector (1) of the electric water pump.
44. Disconnect the harness connector (2) of the electric vacuum pump.



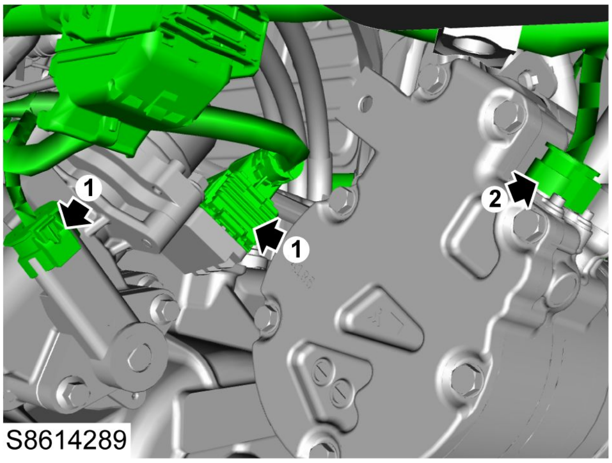
45. Disconnect the low-voltage harness connector of the drive motor.



46. Disconnect the harness connector of the power electronic box.



47. Disconnect the harness connector (1) of the parking mechanism.
48. Disconnect the low-voltage harness connector (2) of the electric A/C compressor.



49. Remove the A/C box assembly.

☞A/C Box Assembly Remove

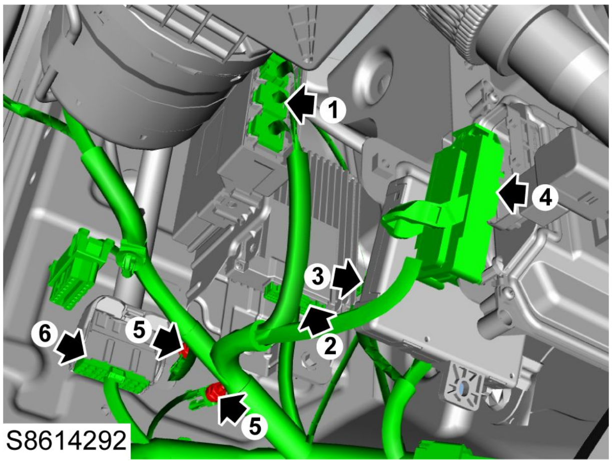
50. Remove the carpet.

☞Carpet Remove

51. Disconnect the harness connector (1) of the passive

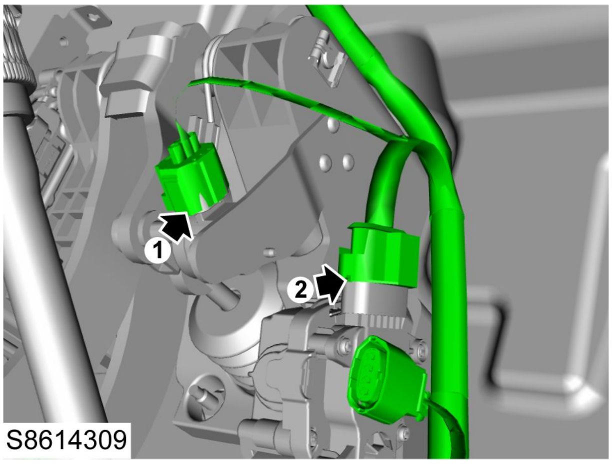
entry and passive start module.

52. Disconnect the harness connector (2) of the around view monitor (AVM).
53. Disconnect the harness connector (3) of the gateway.
54. Disconnect the harness connector (4) of the vehicle control unit.
55. Disconnect 2 ground terminals (5) below the passive entry and passive start module.
56. Disconnect the body harness from the instrument panel harness (6) (driver side).



S8614292

57. Disconnect the harness connector of the brake pedal position sensor.
58. Disconnect the harness connector of the accelerator pedal position sensor.



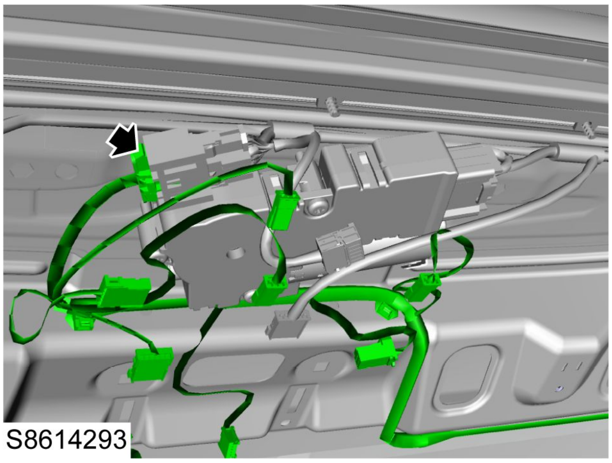
S8614309

59. Disconnect the body harness from the driver door harness.
60. Remove the roof trim panel assembly.

☞**Roof Trim Panel Assembly - without Sunroof Remove**

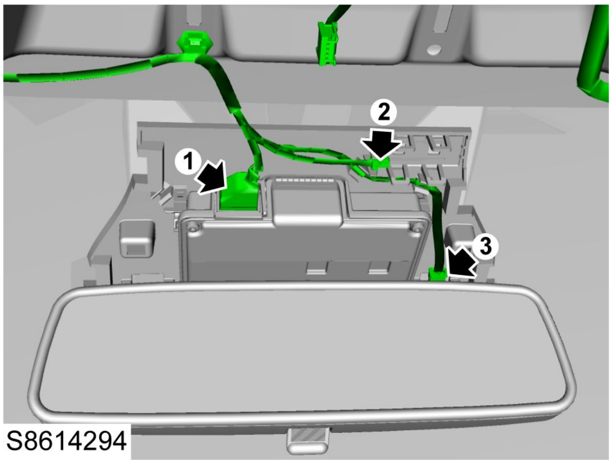
☞**Roof Trim Panel Assembly - with Sunroof Remove**

61. Disconnect the harness connector (if equipped) of the sunroof motor.



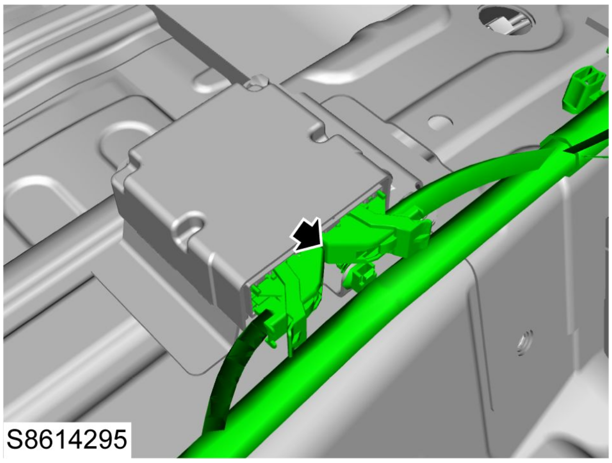
S8614293

62. Remove the interior rearview mirror base.
63. Disconnect the harness connector (1) of the front view camera module.
64. Disconnect the harness connector (3) of the top USB module.
65. Disconnect the harness connector (if equipped) (2) of the rain sensor.



S8614294

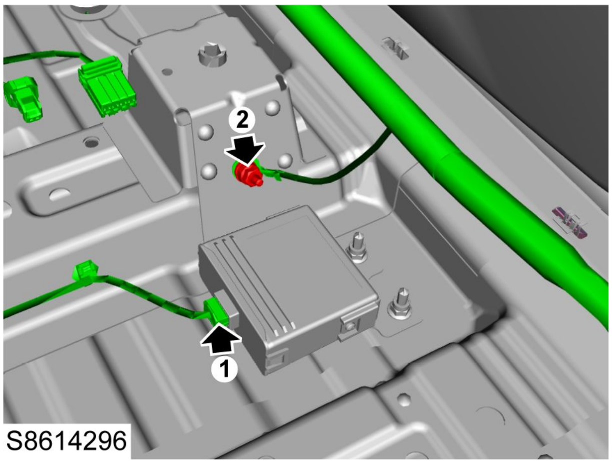
66. Disconnect the harness connector of the sensing and diagnostic module.



S8614295

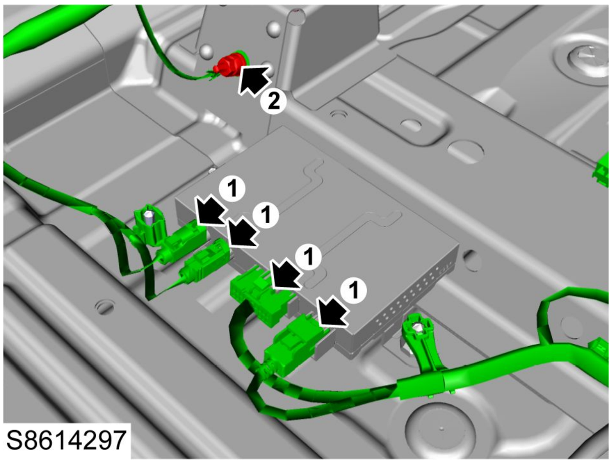
67. Disconnect the ground terminal behind the sensing and diagnostic module.
68. Disconnect harness connector (1) of the pedestrian alert control module.

69. Loosen the ground terminal (2) above the pedestrian alert control module.



70. Disconnect the harness connector (1) of the DAB module.

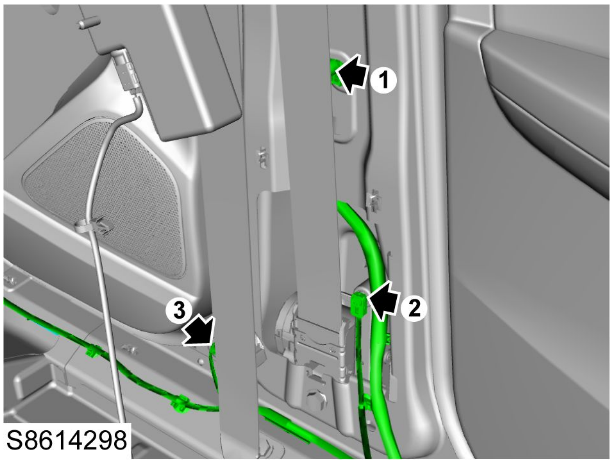
71. Loosen the ground terminal (2) above the DAB module.



72. Disconnect the body harness from the rear door harnesses on both sides (1).

73. Disconnect the harness connectors (2) from the front seat belt pretensioners on both sides.

74. Disconnect the harness connectors (3) from the side impact sensors on both sides.



75. Remove the trunk side trim panel assembly.

☞**Trunk Side Trim Panel Assembly Remove**

76. Remove the tail gate interior trim panel.

☞**Tail Gate Interior Trim Panel Remove**

77. Remove the tail lamp assembly.

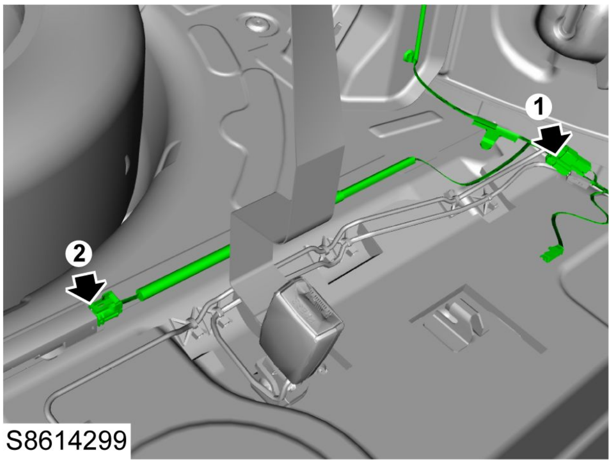
☞**Tail Lamp Assembly Remove**

78. Remove the rear parcel shelf assembly.

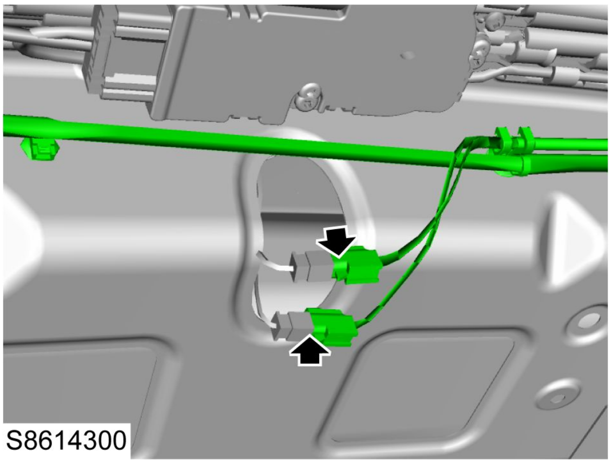
☞**Rear Parcel Shelf Assembly Remove**

79. Disconnect the harness connector (1) of the rear seat belt buckle.

80. Disconnect the harness connector (2) of the passive entry and passive start - trunk.

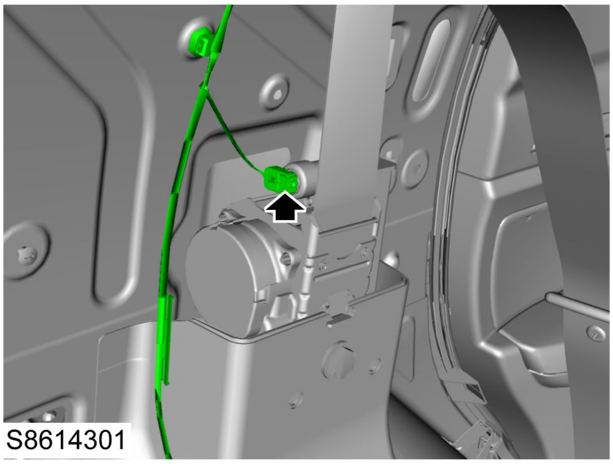


81. Disconnect the harness connector of the top antenna.

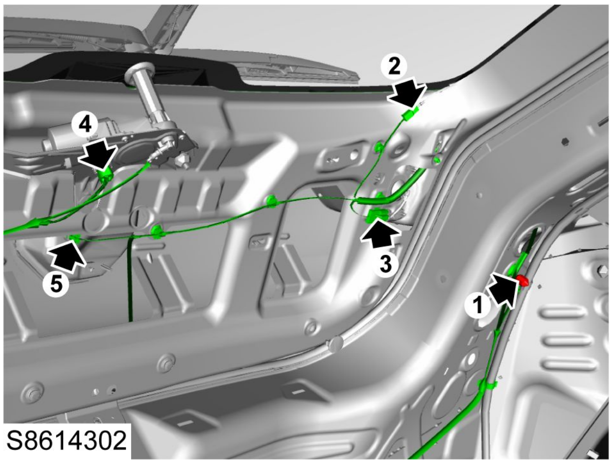


82. Loosen the ground terminal on the right side of the top antenna.

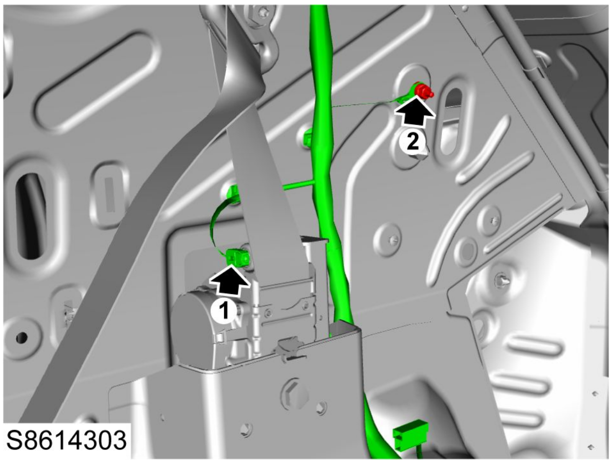
83. Disconnect the harness connector of the left rear seat belt pretensioner.



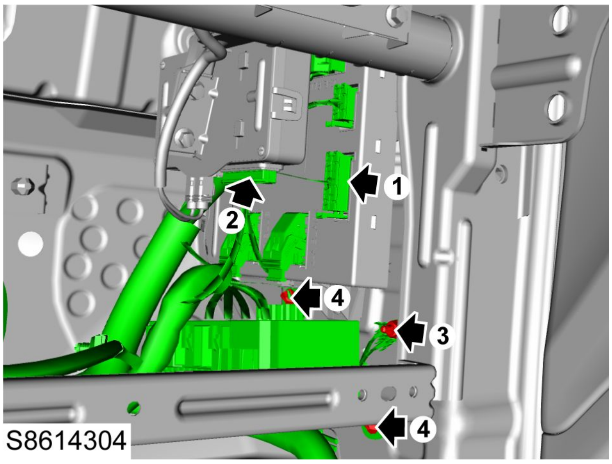
84. Loosen the ground terminal (1) below the left tail lamp.
85. Disconnect the harness connectors (2) of the rear window heating elements on both sides.
86. Disconnect the harness connectors (3) of the rear combination lamps on both sides.
87. Disconnect the harness connector (4) of the rear wiper motor.
88. Disconnect the harness connector (5) of the tail gate release switch.



89. Disconnect the harness connector of the tail gate lock.
90. Disconnect the harness connector (1) of the right rear seat belt pretensioner.
91. Loosen the ground terminal (2) above the right rear seat belt pretensioner.



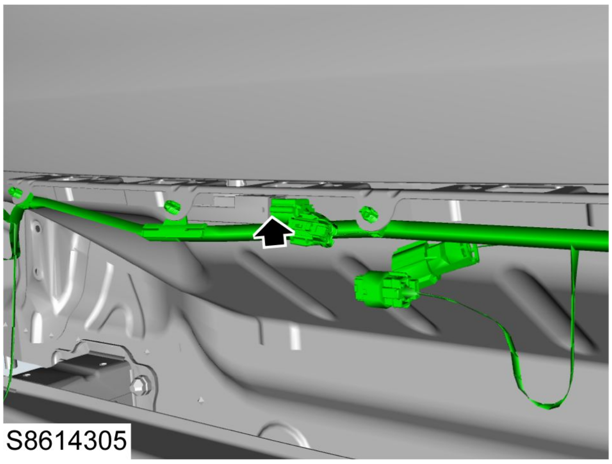
92. Disconnect the harness connector (1) from the BCM.
93. Disconnect the harness connector (2) of the eCall communication module.
94. Loosen the ground terminal (3) below the BCM.
95. Remove 2 bolts (4) fixing the passenger compartment fuse box to the body, and remove the harness.



96. Disconnect the body harness from the passenger door harness.
97. Remove the rear bumper.

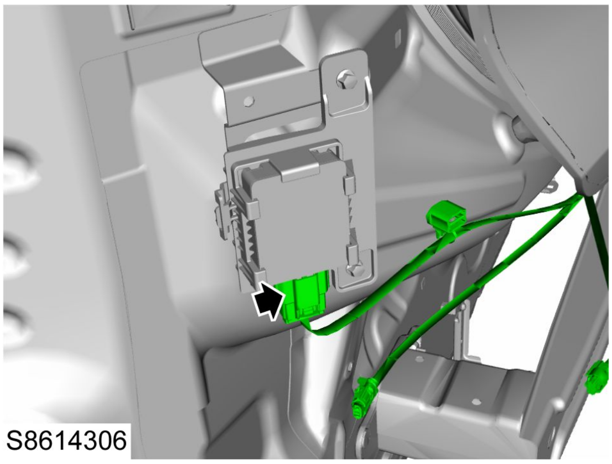
☞**Rear Bumper Remove**

98. Disconnect the harness connector of the passive entry and passive start - rear bumper antenna.



99. Disconnect the harness connector of the backward

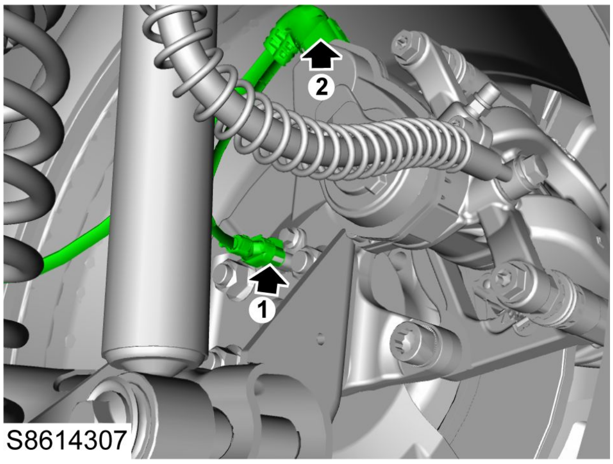
drive assistance detection radar on both sides.



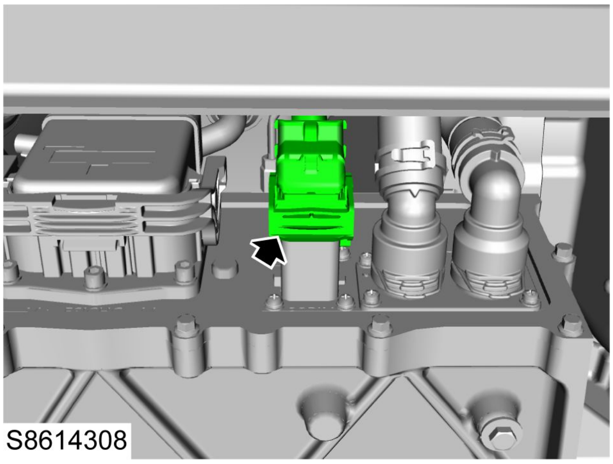
100. Raise the vehicle on a lift.

Warning: Do not work on or under a vehicle supported only by a jack.Always support the vehicle on safety stands.

101. Disconnect the harness connectors (1) of the rear wheel speed sensors on both sides.
102. Disconnect the harness connectors (2) of the rear parking brakes on both sides.



103. Disconnect the low-voltage harness connector of the high-voltage battery pack.



104. Loosen the harness clip, and remove the body harness assembly.

Refit

1. Arrange the body harness inside the body and secure it with clips.
2. Connect the low-voltage harness connector of the high-voltage battery pack.
3. Connect the harness connectors of the rear parking brakes on both sides.
4. Connect the harness connectors of the rear wheel speed sensors on both sides.
5. Lower the vehicle.
6. Connect the harness connector of the backward drive assistance detection radar on both sides.
7. Connect the harness connector of the passive entry and passive start - rear bumper antenna.
8. Fit the rear bumper.

☞**Rear Bumper Refit**

9. Connect the body harness to the passenger door harness.
10. Fit and tighten 2 bolts fixing the passenger compartment fuse box to the body.
11. Tighten the ground terminal below the BCM.
12. Connect the harness connector of the eCall communication module.
13. Connect the harness connector to the BCM.
14. Tighten the ground terminal above the right rear seat belt pretensioner.
15. Connect the harness connector of the right rear seat belt pretensioner.
16. Connect the harness connector of the tail gate lock.
17. Connect the harness connector of the tail gate release switch.
18. Connect the harness connector of the rear wiper motor.
19. Connect the harness connectors of the rear combination lamps on both sides.
20. Connect the harness connectors of the rear window heating elements on both sides.
21. Tighten the ground terminal below the left tail lamp.
22. Connect the harness connector of the left rear seat belt pretensioner.
23. Tighten the ground terminal on the right side of the top antenna.
24. Connect the harness connector of the top antenna.
25. Connect the harness connector of the passive entry and passive start - trunk.
26. Connect the harness connector of the rear seat belt buckle.

27. Fit the rear parcel shelf assembly.

☞**Rear Parcel Shelf Assembly Refit**

28. Fit the tail lamp assembly.

☞**Tail Lamp Assembly Refit**

29. Fit the tail gate interior trim panel.

☞**Tail Gate Interior Trim Panel Refit**

30. Fit the trunk side trim panel assembly.

☞**Trunk Side Trim Panel Assembly Refit**

31. Connect the harness connectors of the impact sensors on both sides.
32. Connect the harness connectors of the front seat belt pretensioners on both sides.
33. Connect the body harness to the rear door harnesses on both sides.
34. Tighten the ground terminal above the DAB module.
35. Connect the harness connector of the DAB module.
36. Tighten the ground terminal above the pedestrian alert control module.
37. Connect the harness connector of the pedestrian alert control module.
38. Tighten the ground terminal behind the sensing and diagnostic module.
39. Connect the harness connector of the airbag control module.
40. Connect the harness connector (if equipped) of the rain sensor.
41. Connect the harness connector of the top USB module.
42. Connect the harness connector of the front view camera module.
43. Fit the interior rearview mirror base.
44. Connect the harness connector of the sunroof motor (if equipped).
45. Fit the roof trim panel assembly.

☞**Roof Trim Panel Assembly - without Sunroof Refit**

☞**Roof Trim Panel Assembly - with Sunroof Refit**

46. Connect the body harness to the driver door harness.
47. Connect the harness connector of the accelerator pedal position sensor.
48. Connect the harness connector of the brake pedal position sensor.
49. Connect the body harness to the instrument panel harness (driver side).
50. Tighten 2 ground terminals below the passive entry and passive start module.
51. Connect the harness connector of the vehicle control unit.
52. Connect the harness connector of the gateway.
53. Connect the harness connector of the around view monitor (AVM).
54. Connect the harness connector of the passive entry and passive start module.
55. Fit the carpet.

☞**Carpet Refit**

56. Fit the A/C box assembly.

☞**A/C Box Assembly Refit**

57. Connect the low-voltage harness connector of the electric A/C compressor.
58. Connect the harness connector of the parking mechanism.
59. Connect the harness connector of the power electronic box.
60. Connect the low-voltage harness connector of the drive motor.
61. Connect the harness connector of the electric vacuum pump.
62. Connect the harness connector of the electric water pump.
63. Fit the bottom deflector.

☞**Bottom Deflector Refit**

64. Connect the harness connector of the electrical park motor control module.
65. Connect the low-voltage harness connector of the high-voltage PDU.
66. Connect the harness connector of the water temperature sensor.
67. Fit 1 nut fixing the body harness to the combined charging unit, tighten it, and close the cover.
68. Connect the low-voltage harness connector of the combined charging unit.
69. Tighten the ground terminal below the A/C pressure switch.
70. Connect the harness connector of the A/C pressure switch.
71. Connect the harness connector of the windscreen washer pump.
72. Connect the harness connector of the pedestrian alert speaker.
73. Connect the harness connector of the right horn.
74. Connect the harness connector of the front right impact sensor.
75. Connect the harness connector of the right headlamp.
76. Connect the harness connector of the front right wheel

speed sensor.

77. Connect the harness connector of the battery chiller.
78. Connect the harness connector of the expansion valve.
79. Tighten the ground terminal of the lower right brake fluid tank.
80. Connect the harness connector of the vacuum sensor.
81. Connect the harness connector of the brake push rod stroke sensor.
82. Connect the harness connector of the brake fluid level sensor.
83. Connect the harness connector of the front left wheel speed sensor.
84. Tighten the ground terminal behind the front compartment fuse box.
85. Fit the brake modulator.

☞**Brake Modulator Refit**

86. Fit the coolant expansion tank.

☞**Coolant Expansion Tank - PEB Refit**

87. Connect the harness connector of the front wiper motor.
88. Fit the A/C air inlet grille assembly.

☞**A/C Air Inlet Grille Assembly Refit**

89. Connect the harness connector of the cooling fan motor.
90. Connect the harness connector of the cooling fan relay.
91. Connect the harness connector of the left front impact sensor.
92. Connect the harness connector of the left headlamp.
93. Tighten the outer ground terminal of the front left longitudinal beam.
94. Connect the harness connector of the electric vehicle communication controller module assembly.
95. Connect the harness connector of the left horn.
96. Connect the harness connector of the forward detection radar module.
97. Connect the harness connector of the bonnet lock.
98. Connect the low voltage harness connector of the charging port.
99. Fit the front compartment fuse box.

☞**Front Compartment Fuse Box Refit**

100. Fit the battery tray.

☞**Battery Tray Refit**

101. Fit the radiator airflow deflector - upper left.

☞**Radiator Airflow Deflector - Upper Refit**

102. Fit the front bumper assembly.

☞**Front Bumper Refit**

103. Fit the manual service disconnect.

☞**Manual Service Disconnect Refit**

104. Connect the negative battery cable.

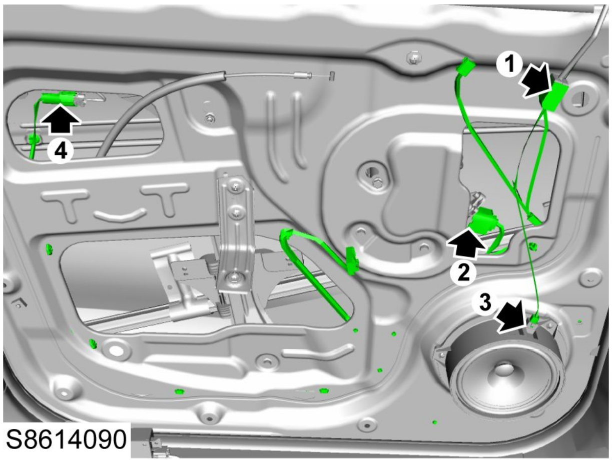
Front Door Harness

Remove

1. Disconnect the negative battery cable.
2. Pry off the rubber seal ring on the body side and disconnect the connector between the front door harness and the body harness.
3. Remove the front door interior trim panel.

☞**Front Door Interior Trim Panel Remove**

4. Tear off the front door waterproof membrane.
5. Disconnect the harness connector (1) of the exterior rearview mirror.
6. Disconnect the harness connector (2) of the front door window regulator motor.
7. Disconnect the harness connector (3) of the front door woofer.
8. Disconnect the harness connector (4) of the front door handle antenna.



9. Disconnect the harness connector of the front door lock motor.
10. Loosen the harness clip and remove the front door harness.

Refit

1. Arrange the front door harness to the door and secure it with clips.
2. Connect the harness connector of the front door lock motor.
3. Connect the harness connector of the front door handle antenna.
4. Connect the harness connector of the front door woofer.
5. Connect the harness connector of the front door window regulator motor.
6. Connect the harness connector of the exterior rearview mirror.
7. Fit the front door waterproof membrane.
8. Fit the front door interior trim panel.

☞**Front Door Interior Trim Panel Refit**

9. Connect the harness connectors of the front door and the body, and fit the rubber seal rings.
10. Connect the negative battery cable.

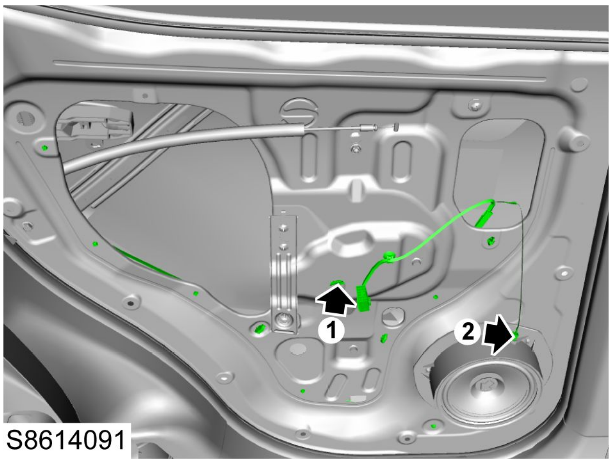
Rear Door Harness

Remove

1. Disconnect the negative battery cable.
2. Pry off the rubber seal ring on the body side and disconnect the connector between the rear door harness and the body harness.
3. Remove the rear door interior trim panel.

☞**Rear Door Interior Trim Panel Remove**

4. Tear off the rear door waterproof membrane.
5. Disconnect the harness connector (1) of the rear door window regulator motor.
6. Disconnect the harness connector (2) of the rear door woofer.



7. Disconnect the harness connector of the rear door lock motor.
8. Loosen the harness clip and remove the front door harness.

Refit

1. Arrange the rear door harness to the door and secure it with clips.
2. Connect the harness connector of the rear door lock motor.
3. Connect the harness connector of the rear door woofer.
4. Connect the harness connector of the rear door window regulator motor.
5. Fit the rear door waterproof membrane.
6. Fit the rear door interior trim panel.

☞**Rear Door Interior Trim Panel Refit**

7. Connect the harness connectors of the rear door and the body, and fit rubber seal rings.
8. Connect the negative battery cable.

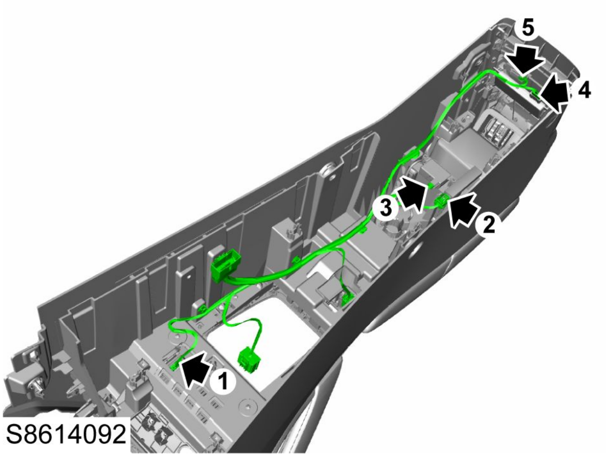
Centre Console Harness

Remove

1. Disconnect the negative battery cable.
2. Remove the centre console assembly.

☞**Centre Console Assembly Remove**

3. Disconnect the harness connector (if equipped) (1) of the wireless charging module.
4. Disconnect the harness connector (2) of the passive entry and passive start - centre console antenna.
5. Disconnect the harness connector (3) of the backup antenna.
6. Disconnect the TPMS harness connector (4).
7. Disconnect the centre console harness from the USB charging module harness (5).



8. Loosen the harness clip, and remove the centre console harness.

Refit

1. Arrange the centre console harness to the centre console and secure it with clips.
2. Connect the centre console harness to the USB charging module harness.
3. Connect the harness connector of the TPMS.
4. Connect the harness connector of the backup antenna.
5. Connect the harness connector of the passive entry and passive start - centre console antenna.
6. Connect the harness connector (if equipped) of the wireless charging module.
7. Fit the centre console assembly.

☞**Centre Console Assembly Refit**

8. Connect the negative battery cable.

Driver Seat Harness

Remove

1. Disconnect the negative battery cable.
2. Remove the front seat exterior trim panel.

☞**Front Seat Exterior Trim Panel Remove**

3. Remove the front seat back cover.

☞**Front Seat Back Cover Remove**

4. Disconnect the harness connector of the front seat adjustment switch.
5. Disconnect the harness connector from the driver seat upward/downward adjustment motor.
6. Disconnect the harness connector from the front seat forward/backward adjustment motor.
7. Disconnect the harness connector from the front seat back adjustment motor.
8. Loosen the harness clip, and remove the seat harness.

Refit

1. Arrange the harness to the seat and secure it with clips.
2. Connect the harness connector to the front seat back adjustment motor.
3. Connect the harness connector to the front seat forward/backward adjustment motor.
4. Connect the harness connector to the driver seat upward/downward adjustment motor.
5. Connect the harness connector of the front seat adjustment switch.
6. Fit the front seat back cover.

☞**Front Seat Back Cover Refit**

7. Fit the front seat exterior trim panel.

☞**Front Seat Exterior Trim Panel Refit**

8. Connect the negative battery cable.

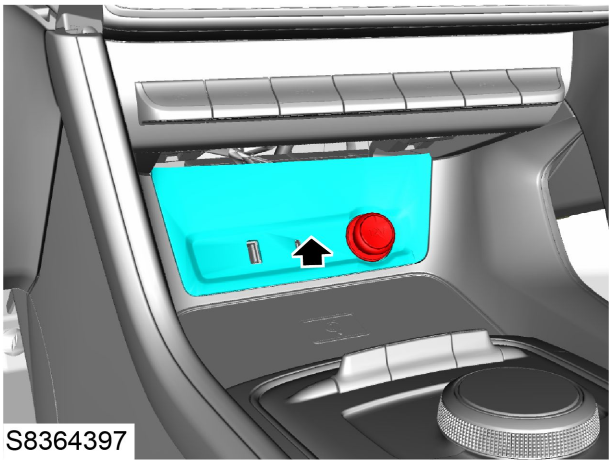
Power Socket

Service Procedures

12V Power Socket

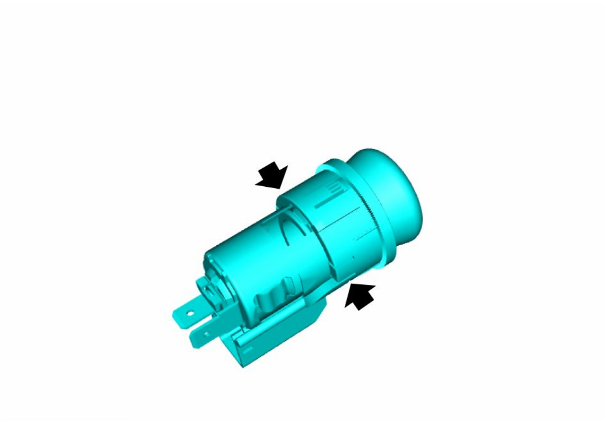
Remove

1. Disconnect the negative battery cable.
2. Pry off the clip and remove the upper trim panel.
3. Loosen the clip, pry off the power socket trim panel and disconnect the harness connector behind.



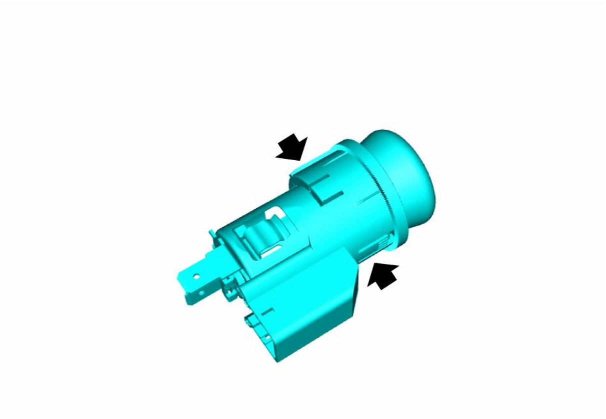
S8364397

4. Loosen the clip fixing the power socket to the bezel, and remove the power socket.



S8413506

5. Loosen the clip fixing the bezel and remove the bezel of the power socket.



S8413508

Refit

1. Locate the bezel of the power socket to the trim panel, and snap it into place.
2. Clip the power socket into the bezel and snap it into place.
3. Connect the harness connector behind the power socket, fit the power socket trim panel, and snap it into place.
4. Fix the upper trim panel to the centre console, and snap it into place.
5. Connect the negative battery cable.

High Voltage Harness

Specifications

Torque

Description	Value
Screw-PDU to body	18–25Nm
Screw-PDU Upper Cover to PDU	5–7Nm
Screw-HV harness and bracket to body	7–10Nm
Nut-HV harness and bracket to body	7–10Nm
Bolt-The PDU bracket to PDU	5–7Nm

Service Procedures

High-voltage Power Distribution Unit (PDU)

Remove

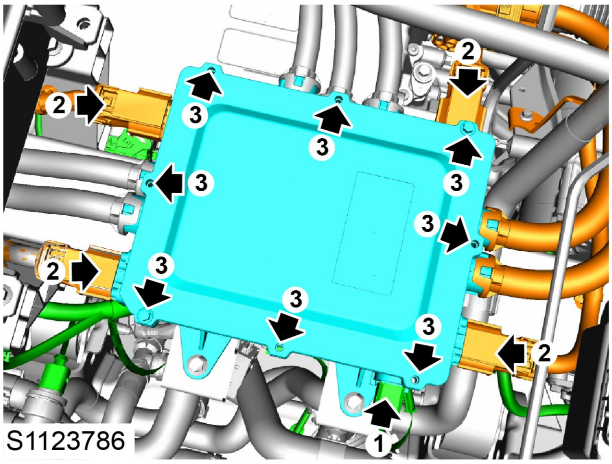
1. Turn off the start switch, remove key and store safely at least 2 metres from the vehicle.

Caution: Please wait 5 minutes after the vehicle power system has been switched off to allow any power stored within the PEB capacitors to have been discharged.

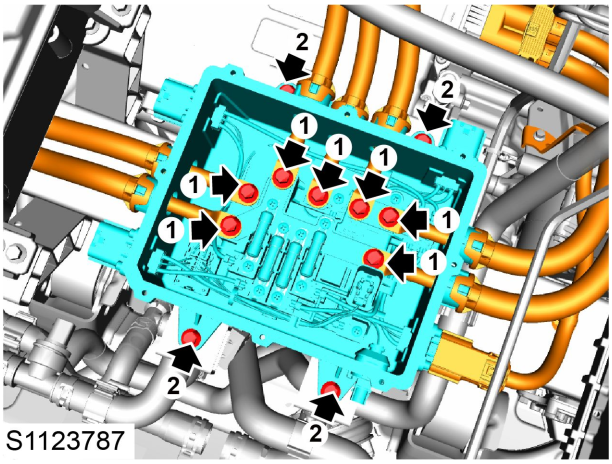
2. Disconnect the negative battery cable.
3. Remove the manual service disconnect.

Manual Service Disconnect Remove

4. Disconnect the low voltage harness connector (1).
5. Disconnect the high-voltage harness connector (2).
6. Remove 8 bolts (3) fixing the **PDU** upper cover to the **PDU**, and remove the **PDU** upper cover.



7. Remove 7 bolts (1) fixing the high-voltage harness to the **PDU**, and pull out the high-voltage harness.
8. Remove 4 bolts (2) fixing the **PDU** to the body, and remove the **PDU** assembly.



Refit

1. Fix the **PDU**assembly to the body, fit 4 bolts, tighten them to **18–25Nm**, and check the torque.
2. Fix the high voltage harness into the **PDU**, fit and tighten 7 bolts.
3. Fix the **PDU** upper cover to the **PDU**, fit 8 bolts, tighten them to **5–7Nm**, and check the torque.
4. Connect the high and low voltage harness connectors.
5. Fit the harness and pipe clips fixing to the **PDU**.
6. Fit the manual service disconnect.

Manual Service Disconnect Refit

7. Connect the negative battery cable.

Combined Charging Unit High-voltage Harness

Remove

Warning: Staff that do not hold the necessary high voltage certification are NOT permitted to dismantle high voltage systems or components (including, ESS. TM, PEB, PDU, EACP, HV harnesses, CCU, ESS PTC, Charging sockets etc).

Warning: Prior to opening any high voltage circuits the systems MUST be checked using a suitable multi meter to ensure they carry no high voltage current. Where there is need to work with the high voltage system is essential that the correct 'make safe' procedure is followed - see Manual Service Disconnect procedure in the Service Repair manual. After disconnecting the Manual Service Disconnect (MSD), always wait 5 minutes prior to commencing any checks for residual voltage etc.

Warning: Any qualified personnel working on high voltage systems or components MUST wear the correct insulated personal protective equipment (PPE). All PPE must be regularly checked and tested for condition and integrity.

Caution: When removing or servicing any parts of the high voltage system it is essential that no liquids enter, contaminate or are spilled on components, harnesses or connectors.

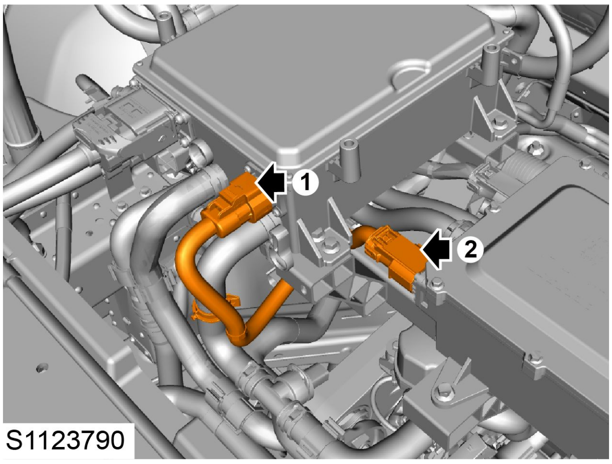
1. Turn off the start switch, remove key and store safely at least 2 metres from the vehicle.

Caution: Please wait 5 minutes after the vehicle power system has been switched off to allow any power stored within the PEB capacitors to have been discharged.

2. Disconnect the negative battery cable.
3. Remove the manual service disconnect.

☞**Manual Service Disconnect Remove**

4. Disconnect the high-voltage harness connector (1) from the combined charging unit.
5. Disconnect the combined charging unit high-voltage harness connector (2) from the **PDU**.



6. Loosen the clip, and remove the combined charging unit high-voltage harness.

Refit

Warning: Before completing the maintenance of the HV system: ESS, Electric Drive Transmission, PEB, PDU, HV harness, EACP, Electric Heater, CCU, ESS heater , charge socket (including all connectors), make sure the negative cable of the 12V battery and manual service disconnect switch are disconnected.

1. Fix the harness to the bracket and secure it with clips.
2. Connect the combined charging unit high-voltage harness connector to the **PDU**.
3. Connect the high-voltage harness connector to the combined charging unit.
4. Fit the manual service disconnect.

☞**Manual Service Disconnect Refit**

5. Connect the negative battery cable.

Traction Battery High-voltage Harness

Remove

***Warning:** Staff that do not hold the necessary high voltage certification are NOT permitted to dismantle high voltage systems or components (including, ESS. TM, PEB, PDU, EACP, HV harnesses, CCU, ESS PTC, Charging sockets etc).*

***Warning:** Prior to opening any high voltage circuits the systems MUST be checked using a suitable multi meter to ensure they carry no high voltage current. Where there is need to work with the high voltage system is essential that the correct 'make safe' procedure is followed - see Manual Service Disconnect procedure in the Service Repair manual. After disconnecting the Manual Service Disconnect (MSD), always wait 5 minutes prior to commencing any checks for residual voltage etc.*

***Warning:** Any qualified personnel working on high voltage systems or components MUST wear the correct insulated personal protective equipment (PPE). All PPE must be regularly checked and tested for condition and integrity.*

***Caution:** When removing or servicing any parts of the high voltage system it is essential that no liquids enter, contaminate or are spilled on components, harnesses or connectors.*

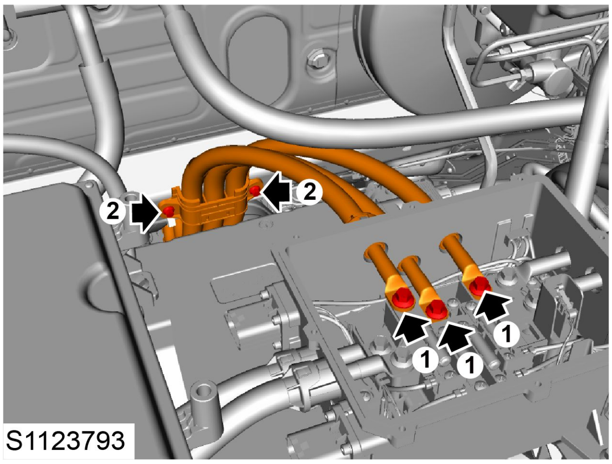
1. Turn off the start switch, remove key and store safely at least 2 metres from the vehicle.

***Caution:** Please wait 5 minutes after the vehicle power system has been switched off to allow any power stored within the PEB capacitors to have been discharged.*

2. Disconnect the negative battery cable.
3. Remove the manual service disconnect.

☞**Manual Service Disconnect Remove**

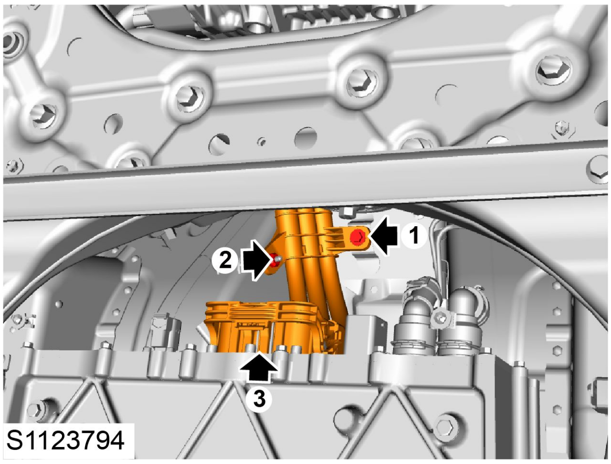
4. Remove 8 bolts (3) fixing the **PDU** upper cover to the **PDU**, and remove the **PDU** upper cover.
5. Remove 3 bolts (1) fixing the high-voltage harness to the **PDU**, and pull out the high-voltage harness.
6. Remove 2 bolts (2) fixing the high-voltage harness to the body.



7. Remove the centre bottom deflector.

☞**Bottom Deflector Remove**

8. Remove 1 bolt (1) and 1 nut (2) fixing the high-voltage harness and bracket to the body.
9. Disconnect the high-voltage harness connector (3) from the high-voltage battery pack, and remove the main high-voltage harness.



Refit

***Warning:** Before completing the maintenance of the HV system: ESS, Electric Drive Transmission, PEB, PDU, HV harness, EACP, Electric Heater, CCU, ESS heater , charge socket (including all connectors), make sure the negative cable of the 12V battery and manual service disconnect switch are disconnected.*

1. Arrange the high voltage harness to the underbody and the dash panel, and secure it with clips.
2. Fix the high-voltage harness and bracket to the body, fit 1 bolt and 1 nut, tighten them to **7–10Nm** and **7–10Nm** respectively, and check the torque.
3. Connect the high voltage harness connector to the high-voltage battery pack.
4. Fit the centre bottom deflector.

☞**Bottom Deflector Refit**

5. Fix the high-voltage harness to the body, fit 2 bolts, tighten them to **7–10Nm**, and check the torque.

6. Fix the high voltage harness into the **PDU**, fit and tighten 3 bolts.
7. Fix the **PDU** upper cover to the **PDU**, fit 8 bolts, tighten them to **5–7Nm**, and check the torque.
8. Fit the manual service disconnect.

☞**Manual Service Disconnect Refit**

9. Connect the negative battery cable.

PDU to A/C Compressor to Power Electronic Box High-voltage Harness

Remove

Warning: Staff that do not hold the necessary high voltage certification are NOT permitted to dismantle high voltage systems or components (including, ESS. TM, PEB, PDU, EACP, HV harnesses, CCU, ESS PTC, Charging sockets etc).

Warning: Prior to opening any high voltage circuits the systems MUST be checked using a suitable multi meter to ensure they carry no high voltage current. Where there is need to work with the high voltage system is essential that the correct 'make safe' procedure is followed - see Manual Service Disconnect procedure in the Service Repair manual. After disconnecting the Manual Service Disconnect (MSD), always wait 5 minutes prior to commencing any checks for residual voltage etc.

Warning: Any qualified personnel working on high voltage systems or components MUST wear the correct insulated personal protective equipment (PPE). All PPE must be regularly checked and tested for condition and integrity.

Caution: When removing or servicing any parts of the high voltage system it is essential that no liquids enter, contaminate or are spilled on components, harnesses or connectors.

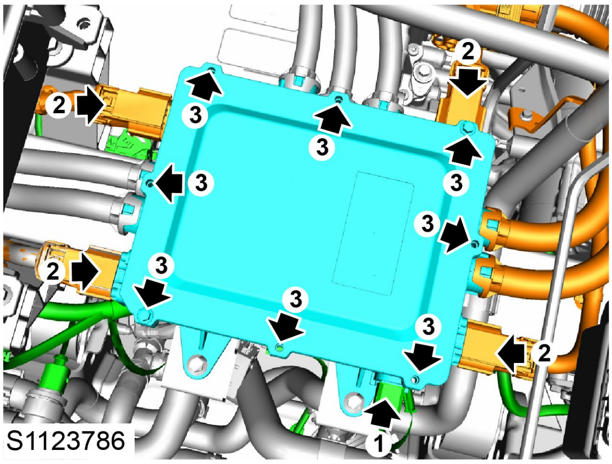
1. Turn off the start switch, remove key and store safely at least 2 metres from the vehicle.

Caution: Please wait 5 minutes after the vehicle power system has been switched off to allow any power stored within the PEB capacitors to have been discharged.

2. Disconnect the negative battery cable.
3. Remove the manual service disconnect.

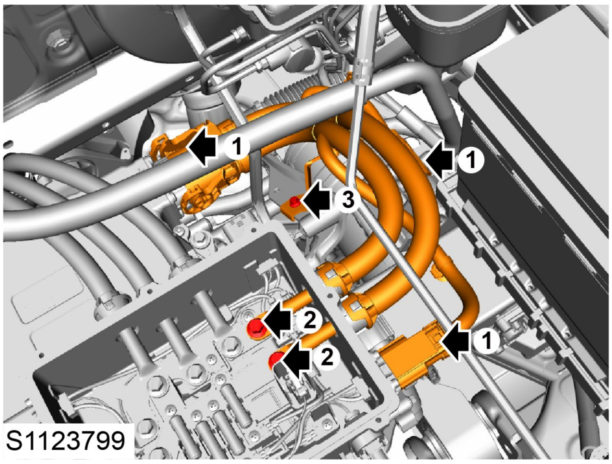
☞**Manual Service Disconnect Remove**

4. Remove 8 bolts (3) fixing the **PDU** upper cover to the **PDU**, and remove the **PDU** upper cover.



5. Disconnect the high-voltage harness connector (1).

6. Remove 2 bolts (2) fixing the high-voltage harness to the **PDU**, and pull out the high-voltage harness.
7. Remove 1 bolt (3) fixing the high-voltage harness to its bracket.



8. Loosen the harness clip and remove the high-voltage harness.

Refit

Warning: Before completing the maintenance of the HV system: ESS, Electric Drive Transmission, PEB, PDU, HV harness, EACP, Electric Heater, CCU, ESS heater , charge socket (including all connectors), make sure the negative cable of the 12V battery and manual service disconnect switch are disconnected.

1. Arrange the high-voltage harness to the body and secure it with clips.
2. Fix the high-voltage harness to its bracket , fit 1 bolt, tighten it to **7–10Nm**, and check the torque.
3. Fix the high voltage harness into the **PDU**, fit and tighten 2 bolts.
4. Connect the high-voltage harness connector.
5. Fix the **PDU** upper cover to the **PDU**, fit 8 bolts, tighten them to **5–7Nm**, and check the torque.
6. Fit the manual service disconnect.

☞**Manual Service Disconnect Refit**

7. Connect the negative battery cable.

Heater High-voltage Harness

Remove

Warning: Staff that do not hold the necessary high voltage certification are NOT permitted to dismantle high voltage systems or components (including, ESS. TM, PEB, PDU, EACP, HV harnesses, CCU, ESS PTC, Charging sockets etc).

Warning: Prior to opening any high voltage circuits the systems MUST be checked using a suitable multi meter to ensure they carry no high voltage current. Where there is need to work with the high voltage system is essential that the correct 'make safe' procedure is followed - see Manual Service Disconnect procedure in the Service Repair manual. After disconnecting the Manual Service Disconnect (MSD), always wait 5 minutes prior to commencing any checks for residual voltage etc.

Warning: Any qualified personnel working on high voltage systems or components MUST wear the correct insulated personal protective equipment (PPE). All PPE must be regularly checked and tested for condition and integrity.

Caution: When removing or servicing any parts of the high voltage system it is essential that no liquids enter, contaminate or are spilled on components, harnesses or connectors.

1. Turn off the start switch, remove key and store safely at least 2 metres from the vehicle.

Caution: Please wait 5 minutes after the vehicle power system has been switched off to allow any power stored within the PEB capacitors to have been discharged.

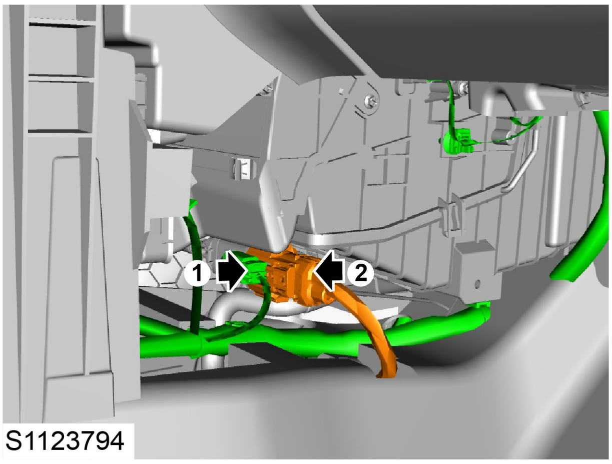
2. Disconnect the negative battery cable.
3. Remove the manual service disconnect.

☞**Manual Service Disconnect Remove**

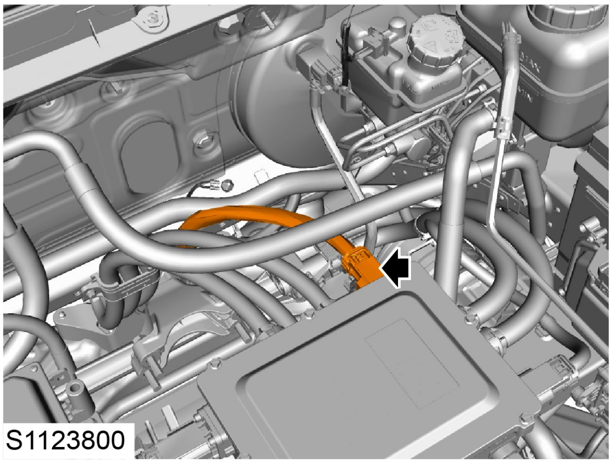
4. Remove the centre console heater closing plate assembly.

☞**Centre Console Heater Closing Plate Assembly Remove**

5. Disconnect the low-voltage harness connector (1) of the electric heater.
6. Disconnect the high-voltage harness connector (2) of the electric heater.



7. Disconnect the PTC high-voltage harness connector from the **PDU**.



8. Lift the carpet, pry off the rubber ring, loosen the harness clip, and pull out the PTC high-voltage harness.

Refit

Warning: Before completing the maintenance of the HV system: ESS, Electric Drive Transmission, PEB, PDU, HV harness, EACP, Electric Heater, CCU, ESS heater , charge socket (including all connectors), make sure the negative cable of the 12V battery and manual service disconnect switch are disconnected.

1. Arrange the heater high voltage harness to the body and secure it with clips.
2. Restore the carpet.
3. Connect the heater high-voltage harness connector to the **PDU**.
4. Connect the high-voltage harness connector to the electric heater.
5. Connect the low-voltage harness connector to the battery heater.
6. Fit the centre console heater closing plate assembly.

☞**Centre Console Heater Closing Plate Assembly Refit**

7. Fit the manual service disconnect.

☞**Manual Service Disconnect Refit**

8. Connect the negative battery cable.

Heater High-voltage Harness 2

Remove

Warning: Staff that do not hold the necessary high voltage certification are NOT permitted to dismantle high voltage systems or components (including, ESS. TM, PEB, PDU, EACP, HV harnesses, CCU, ESS PTC, Charging sockets etc).

Warning: Prior to opening any high voltage circuits the systems MUST be checked using a suitable multi meter to ensure they carry no high voltage current. Where there is need to work with the high voltage system is essential that the correct 'make safe' procedure is followed - see Manual Service Disconnect procedure in the Service Repair manual. After disconnecting the Manual Service Disconnect (MSD), always wait 5 minutes prior to commencing any checks for residual voltage etc.

Warning: Any qualified personnel working on high voltage systems or components MUST wear the correct insulated personal protective equipment (PPE). All PPE must be regularly checked and tested for condition and integrity.

Caution: When removing or servicing any parts of the high voltage system it is essential that no liquids enter, contaminate or are spilled on components, harnesses or connectors.

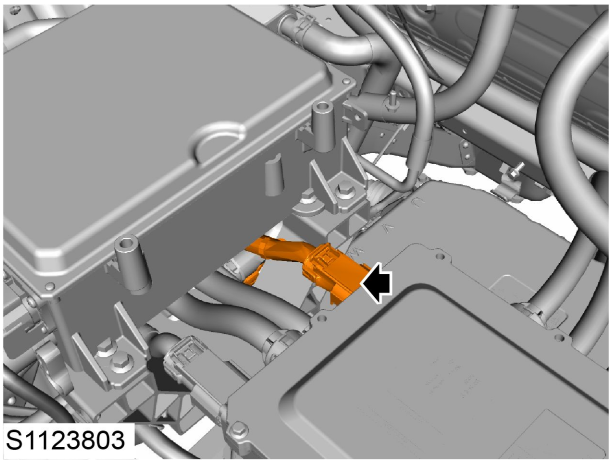
1. Turn off the start switch, remove key and store safely at least 2 metres from the vehicle.

Caution: Please wait 5 minutes after the vehicle power system has been switched off to allow any power stored within the PEB capacitors to have been discharged.

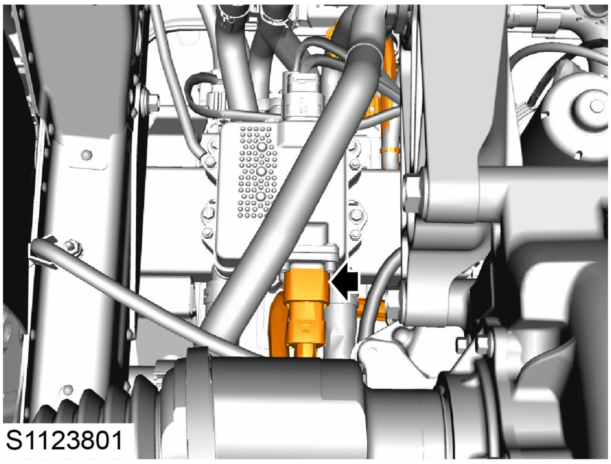
2. Disconnect the negative battery cable.
3. Remove the manual service disconnect.

☞**Manual Service Disconnect Remove**

4. Disconnect the harness connector from the traction battery electric heater at the **PDU**.



5. Disconnect the high voltage harness connector from the traction battery electric heater.



6. Loosen the harness clip and remove the harness from the traction battery electric heater.

Refit

Warning: Before completing the maintenance of the HV system: ESS, Electric Drive Transmission, PEB, PDU, HV harness, EACP, Electric Heater, CCU, ESS heater , charge socket (including all connectors), make sure the negative cable of the 12V battery and manual service disconnect switch are disconnected.

1. Fix the high-voltage harness of the traction battery electric heater to the front compartment and secure it with clips.
2. Connect the high-voltage harness connector of the traction battery electric heater.
3. Connect the high-voltage harness of the traction battery electric heater at the **PDU**.
4. Fit the manual service disconnect.

☞**Manual Service Disconnect Refit**

5. Connect the negative battery cable.

Wireless Charging Of Mobile Phone

Specifications

Torque

Description	Value
Bolt-Wireless Device to Trim	1.4–1.8Nm

Service Procedures

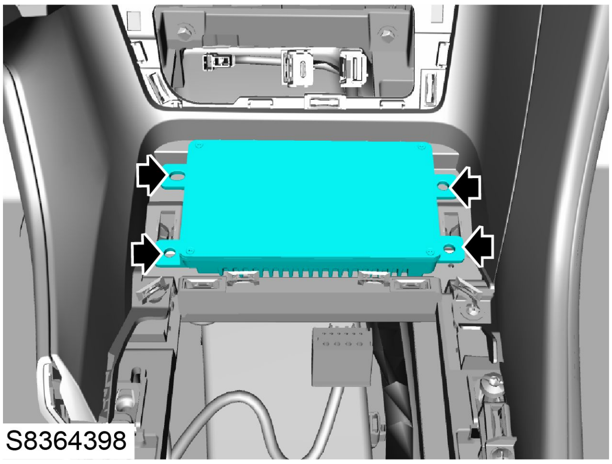
Mobile wireless charging module

Remove

1. Disconnect the negative battery.
2. Remove the center control upper trim panel.

☞**Manual Service Disconnect Remove**

3. Pry open the clip and remove the cover of wireless charging module.
4. Remove the four screws that secure the wireless charging module to the center console.



5. Disconnect the harness connector and remove the wireless charging module.

Refit

1. Fix the wireless charging module of the mobile phone to the center console, install 4 screws, and tighten to**1.4–1.8Nm**，And check the torque.
2. Fix the cover of wireless charging module of mobile phone to the center console and snap in the clip.
3. Install the center control upper trim panel.

☞**Manual Service Disconnect Remove**

4. Connect the negative battery.

Glossary List

Name	Description
BCM	Body Control Module
BMS	Battery Management System
DTI	Dial Test Indicator
EBS	Electrical Battery Sensor
ECU	Electronic Control Unit
EPS	Electric Power Steering
ESCL	Electronic steering column lock
ESS	Energy Storage System
HSLA	High Strength Low Alloy
ICS	Inflatable Curtain Structure
IPK	Instruments Pack Kit
PDU	Power Distribution Unit
PEB	Power Electrical Box
PEPS	Passive Entry Passive Start
PVC	Polyvinyl Chloride
SDM	Sensing Diagnostic Module
SRS	Supplementary Restraint System
TBOX	Telematics BOX
VCU	Vehicle Control Unit
VDS	Vehicle Diagnostic System
VIN	Vehicle Identification Number